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HELMINTHOLOGICAL ABSTRACTS

incorporating

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For the Year 1937.

IMPERIAL BUREAU OF AGRICULTURAL PARASITOLOGY
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HELMINTHOLOGICAL ABSTRACTS

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Vol. VI, Part 2.

71—American Journal of Hygiene.

a. SCOTT, J. A., 1937.—"Dilution egg counting in comparison with other methods for determining the incidence of *Schistosoma mansoni*." **25** (3), 546-565.

b. SCOTT, J. A., 1937.—"The incidence and distribution of the human schistosomes in Egypt." **25** (3), 566-614.

(71a) Scott is of opinion that dilution egg counting can seldom be the sole method of diagnosis of *Schistosoma mansoni* for clinical use in individual cases. It is satisfactory in groups of people but sometimes fails when very few eggs are passed. Optimum results can be obtained by using a sedimentation method with 3 egg count slides for each specimen. R.T.L.

(71b) Extensive data obtained from examination of about 40,000 persons in a house to house survey of Schistosoma infections are analysed and correlated with similar data recorded by government bilharzia treatment centres in Egypt. It is estimated that of 12 million inhabitants about 7 million are infected with schistosomes. In the north and eastern parts of the delta the *S. mansoni* infection rate is about 60%. In the southern part of the delta *S. mansoni* infected only about 6%, although the vectors are as abundant. In the valley of the Nile, south of Cairo, *S. mansoni* vectors are absent but *S. haematobium*, as in the delta, occurs in 60% of the population in the perennially irrigated areas, while in the areas still under the ancient system of basin irrigation the infection rate is only 5%. There are proposals to convert 700,000 acres of this basin irrigated region to perennial irrigation during the next 15 years. As it is at present populated by 2 million people Scott questions the economic value to the State of the proposed change.

R.T.L.

72—American Journal of Public Health.

a. SMITH, W. H. Y., McALPINE, J. G. & GILL, D. G., 1937.—"Intestinal parasite survey in Alabama. I. A comparative study of two hookworm anthelmintics." **27** (5), 471-475.

(72a) Smith, McAlpine & Gill have tested the relative efficiency of a mixture of carbon tetrachloride 2 parts and oil of chenopodium 1 part, with that of tetrachlorethylene in the treatment of hookworm disease. These drugs were administered to a large number of hookworm infested school

children in Alabama. Re-examination of the stools 10 to 14 days after treatment showed that hookworm ova were still present in 3 times as many of the children treated with tetrachlorethylene as in those treated with the combination of oil of chenopodium and carbon tetrachloride. K.S.

73—American Journal of Tropical Medicine.

a. HALL, M. C., 1937.—" Studies on oxyuriasis. I. Types of anal swabs and scrapers, with a description of an improved type of swab." 17 (3), 445-453.

(73a) Hall has devised a satisfactory swab for use in the diagnosis of oxyuriasis. It consists of a glass rod held in a test tube by a perforated cork. The tip of the rod is covered with a small square of cellophane held by a wide rubber band. The swab acts both as a swab and a scraper. It picks up eggs effectively. The cellophane is transferred after use to a slide and covered by a coverslip for microscopical examination. R.T.L.

74—Annales de Parasitologie Humaine et Comparée.

a. BAUDET, E. A. R. F., 1937.—" *Cyathostoma phenisci* n. sp. parasite de la trachée d'un pingouin." 15 (3), 218-224.
b. RODHAIN, J. & VUYLSTEKE, C., 1937.—" Une filaire nouvelle d'*Iguana tuberculata* (*Breinlia brevicaudata* n. sp.)." 15 (3), 225-228.
c. BERGHE, L. VAN DEN, 1937.—" Une microfilaire du sang de l'éléphant au Congo belge." 15 (3), 229-230.
d. DOLLFUS, R. P., 1937.—" Les trématodes Digenea des sélaciens (plagiostomes). Catalogue par hôtes. Distribution géographique." 15 (1), 57-73 ; (2), 164-176 ; (3), 259-281.

(74a) From a penguin, *Pheniscus humboldti*, recently imported from Chile, a new gapeworm *Cyathostoma phenisci* n. sp. is described. It is distinguished by the size of the body and of the spicules, and especially by the dorsal ray of the bursa. This new form brings the number of species of *Cyathostoma* up to 8. R.T.L.

(74b) A new species of Filariidae is described from an *Iguana tuberculata* from South America. It is pointed out that the 2 known species of *Breinlia* occur in marsupials. R.T.L.

(74c) In the blood of one out of 42 African elephants examined at Gangalana Bodio, Uele (Belgian Congo), van den Berghe found a sheathless microfilaria 200μ × 5μ. It is named *Microfilaria loxodontis* n. sp. R.T.L.

(74d) Dollfus presents a host-list of the digenetic trematodes of selachian fishes, arranged zoologically under hosts, and giving also the distribution and references. There is a four-page index of parasites and nine pages of bibliography. The following new forms are included : *Monodhelmis torpedinis* n. g., n. sp. from *Narcacion torpedo*, and *Paronatrema vaginicola* n. g., n. sp. from a Squalus. *Otodistoma* is provisionally divided into six forms on the basis of egg measurements. B.G.P.

75—Annals and Magazine of Natural History.

a. BAYLIS, H. A., 1937.—" Some parasitic worms from East African chamaeleons." Ser. 10, 19 (114), 584-593.

(75a) Baylis records from chamaeleons in Tanganyika, Kenya and Uganda a number of known helminths, viz., 1 trematode, 2 cestodes and 6 nematodes of which 5 are undetermined forms. R.T.L.

76—Annals of Tropical Medicine and Parasitology.

a. SANDGROUND, J. H., 1937.—" A note on *Phacochoerostrongylus pricei* Schwartz, 1928, and on the male of *Oesophagostomum goodeyi* Daubney, 1926." **31** (1), 23-24.

b. SOUTHWELL, T. & KIRSHNER, A., 1937.—" Description of a polycephalic cestode larva from *Mastomys erythroleucus*, and its probable identity." **31** (1), 37-42.

c. BLACKLOCK, D. B., 1937.—" Studies in rural hygiene in the tropics. IV. The place of mass treatment in tropical hygiene." **31** (1), 141-144.

(76a) From a wart-hog, *Phacochoerus aethiopicus*, shot in the Belgian Congo, Sandground obtained 20 specimens of *Phacochoerostrongylus pricei* Schwartz and some male examples of *Oesophagostomum goodeyi* Daubney. For both species measurements are given and a few details of structure are mentioned. This is the first time that the male of *O. goodeyi* has been described. T.G.

(76b) A cyst, with 12 segmented strobila radiating externally, is described from the rat *Mastomys erythroleucus* in Sierra Leone. From the number, form and size of the hooks and the character of the strobila Southwell & Kirshner conclude that this is an abnormal form of *Cysticercus fasciolaris*. R.T.L.

(76c) Blacklock concludes from a discussion of mass treatment that with dangerous drugs it " should be regarded as the last resort, to be sought only when mass education in hygiene has been given a thorough trial and has demonstrably failed." R.T.L.

77—Annual Report of the Agricultural and Horticultural Research Station, Long Ashton, 1936.

a. WALTON, C. L., OGILVIE, L. & HICKMAN, C. J., 1937.—" The effect of nitrogenous fertilisers on potatoes affected with potato ' sickness '." 149-155.

b. WALTON, C. L., 1937.—" *Anguillulina dipsaci* (Kühn) as a cause of parsnip ' canker '." 156-159.

(77a & b) [For abstracts of these papers see below Nos. 107b & c.]

78—Archiv für Dermatologie und Syphilis.

a. SCHÖNFELD, W., 1937.—" Ascarisextrakte und Haut." **175** (1), 54-70.

(78a) Schönfeld describes reactions which follow intracutaneous injections of Ascaris extracts. When the skin is sensitive to these injections the primary effect is to cause swelling, while the toxic principle in the extract leads to various secondary reactions. Of these, erythema migrans is described. A previously non-sensitive skin can be sensitized by repeated injections.

This may result in anaphylactic shock with urticaria over the body, or in attacks of asthma. Eosinophilia is in evidence during the first hours of the shock. Intracutaneous injections of Ascaris extracts could not be used to demonstrate the presence of Ascaris, Oxyuris or Trichocephala since the reaction was absent in some cases with worms, and present in others without worms. In children, however, a strongly positive immediate reaction, even when ova are lacking in the stools, should make one suspect the presence of worms. R.H.H.

79—Archiv für Schiffs- und Tropen-Hygiene.

a. MÜHLENS, P., 1937.—" *Onchocerca volvulus* aus Kamerun." **41** (5), 430-432.

80—Archives de l'Institut Pasteur de Tunis.

a. BALOZET, L., 1937.—" *Brachylaemus suis mihi* 1936. Trématode de l'intestin du porc. Rôle pathogène et cycle évolutif." **26** (1), 36-37.

(80a) Balozet gives a fuller account of the anatomy of *Brachylaemus suis* recorded by him in the pig in 1936 [see Helm. Abs., Vol. v, No. 197a] and differentiates it from the 24 known species of this genus. This fluke appears in large numbers in pigs in Tunis. The life cycle has now been traced and can apparently take place in all pulmonate gastropods. The forms naturally infected were *Xerophilia mendranoi*, *X. chioidea*, *X. phoeba*, *X. spilmenti*, *X. terrestris*, *X. eucana*, *X. eumona*, *Helix* (*Cantarelus*) *aperta* and *Rumina decollata*. The egg, miracidium, sporocyst, cercaria and metacercaria are described and illustrated. Infections were produced experimentally in rabbits, rats and mice, pigeons and turkeys, but guinea-pigs, fowls and ducks were refractory. R.T.L.

81—Archivio Italiano di Scienze Mediche Coloniali e di Parassitologia.

a. CIMINO, V., 1937.—" 'Il segno della lingua' negli anchilostomiasici indigeni." **18** (4), 196-199.
b. SCADUTO, P., 1937.—" Considerazioni su alcuni casi di bilharziosi vescicale." **18** (4), 235-243.
c. SERRA, G., 1937.—" Il rame, quale nuovo rimedio nelle bilharziosi intestinale e vescicale." **18** (4), 244-253.

(81a) Cimino illustrates a pigmented condition of the tongue of Somalis which he claims to be diagnostic of ancylostomiasis. The reaction is proportional to the infection in intensity. B.G.P.

(81c) Serra claims that copper in the form of " Paludex " (sodium cupro-oxyquinoline-sulphonate) is destined to replace antimony in the treatment of intestinal and vesical schistosomiasis. The drug is given orally in doses of 3 cgm. per kg. body-weight, over a period of ten days, with a saline purge every two or three days. The intravenous route has no advantages over the oral. B.G.P.

82—Australian Veterinary Journal.

a. JONES, T. R., 1937.—" Observations of a stock inspector in the Jerilderie pastures protection district, 1933-1936." **13** (2), 64-72.

(82a) The parasites observed by Jones as being of any importance to stock in Jerilderie are *Fasciola hepatica* and *Trichostrongylus* spp. in sheep, and *Habronema* spp. in the horse. J.W.G.L.

83—Berliner Tierärztliche Wochenschrift.

a. MEYER, R., 1937.—" Die Ergebnisse der Schlachtvieh- und Fleischbeschau im Jahre 1934." Jahrg. 1937 (19), 293-297.

84—British Medical Journal.

a. ALEXANDER, A. J. P., 1937.—" Epilepsy and cysticercosis." No. 3983, 966-967.

(84a) Alexander records a case of epilepsy due to cysticercosis in a patient who had spent some time in India. An X-ray photo of the pelvis shows a massive infection of the thigh muscles with cysts. R.T.L.

85—Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris.

a. LEVI-VALENSI, A., 1937.—" Échinococcose hépatique multisacculaire. Échinococcose pulmonaire métastatique et tuberculose." **53** (22), 913-920.

86—Bulletin Mensuel de l'Office International d'Hygiène Publique.

a. CUMMING, H. S., 1937.—" Sur l'ankylostomiase aux États-Unis." **29** (4), 748-751.
b. VILLEJEAN, A., 1937.—" L'ankylostomiase dans les mines en France." **29** (4), 752-777.
c. ESPIÉ, A., 1937.—" L'ankylostomiase en Tunisie dans les terrains cultivés et les campagnes." **29** (4), 778-783.

(86a) Cumming's data on ancylostomiasis in U.S.A. serve to complete those of the earlier study in 1936 [see Helm. Abs., Vol. V., No. 198b]. Although at one time an important disease among the miners of California, and one for which there is compensation-liability, hookworm is not to-day a serious matter in the mines. Among country people in the South the campaign has not yet been decisively won, although much has been done by the Rockefeller Foundation. B.G.P.

(86b) In the case of France, Villejean is able to report, as the result of a recent questionary, that hookworm is rarely found in French miners and anaemia is practically absent. This compares favourably with the position in 1904 when a Commission had to be set up. The data reported on by that Commission and those of the present time are set out in some detail. B.G.P.

(86c) In Tunis, Espié finds ancylostomiasis common only in the oases of the south, where conditions are favourable and the population ignorant of its prevention. In the mines, which are surface excavations in the hill-sides, conditions would not be favourable ; there are no data, however, since the miners did not consent to faeces examinations. B.G.P.

87—Bulletin de la Société de Pathologie Exotique.

a. GOBERT, E., 1937.—" Traitement de la bilharziose par l'antimonio-thiomalate de lithium (Anthiomaline) à Gafsa." **30** (5), 393-398.
b. JOYEUX, C., BAER, J. G. & MARTIN, R., 1937.—" Sur quelques helminthes de la Somalie-Nord." **30** (5), 416-423.
c. SILVERIE, M., 1937.—" Note sur l'existence de quelques foyers de bilharziose vésicale dans la région de Morondava." **30** (5), 430-432.
d. ROUBAUD, E. & COLAS-BELCOUR, J., 1937.—" Nouvelles recherches sur l'évolution experimentale de *Dirofilaria immitis* chez quelques culicides indigènes." **30** (6), 480-484.
e. PALAIS, M., 1937.—" Développement de *Taenia saginata* G., dans les cas de parasitisme multiple." **30** (6), 485-490.
f. VELU, H. & ZOTTNER, G.—" Chéloides géantes consécutives à l'habronémose cutanée chez le baudet." **30** (6), 490-494.
g. ROUBAUD, E., 1937.—" Nouvelles recherches sur l'infection de moustique de la fièvre jaune par *Dirofilaria immitis* Leidy. Les races biologiques d'*Aëdes aegypti* et l'infection filarienne." **30** (6), 511-519.

(87a) More than 50% of the population of Gafsa have urinary bilharziasis. Gobert reports the results of intermuscular injections of antimonio-thiomalate of lithium. In his opinion there is little to choose between this drug and Fouadin. R.T.L.

(87b) In a second brief faunistic note on the helminths of Somaliland, 1 trematode and 4 cestodes are recorded. Of the cestodes 2 are new, viz., *Choanotaenia tringae* n. sp. from *Tringa* sp., and *C. corvi* n. sp. from *Corvus rhipidurus*. A table is given differentiating the 13 species of *Choanotaenia* in the Charadriiformes. R.T.L.

(87d) Roubaud & Colas-Belcour show experimentally that *Aëdes geniculatus* and *A. punctor* are efficient vectors of *Dirofilaria immitis*. Development is slow and apparently incomplete in *Anopheles plumbeus*. B.G.P.

(87e) Palais has investigated the size, and number and degree of development of segments, of *Taenia saginata* from numerous cases of multiple infection. He finds that size and number of segments are reduced but that reproductive organs develop earlier when several tapeworms occur together. There were no structural anomalies such as he had previously found in heavy infections of *Hymenolepis diminuta*. B.G.P.

(87f) Discussing the histo-pathology of summer sores in donkeys, Velu & Zottner claim that in structure they differ fundamentally from fibromata and resemble keloids. Moreover, they frequently reappear after extirpation and may be associated with some dysfunction of the connective tissue—although the part played by Habronema in their aetiology is not disputed. B.G.P.

(87g) Roubaud, who had previously (1936) shown that *Aëdes aegypti* was not an efficient carrier of *Dirofilaria immitis*, now modifies this conclusion. While in Cuban races of the mosquito blockage of the Malpighian tubules by microfilariae occurs, development is able to proceed in races from Assam and Tanganyika, and in a Cuba × Assam hybrid. Thus, biological races of *A. aegypti* exist. B.G.P.

88—Canadian Journal of Research. Section C. Botanical Sciences.

a. HASTINGS, R. J. & NEWTON, W., 1937.—" Preliminary studies of the transfer of four strains of *Ditylenchus dipsaci* (Kühn 1858) Filipjev 1936." 15 (4), 168-174.

b. NEWTON, W., HASTINGS, R. J. & BOSHER, J. E., 1937.—" The nematode disease of bulbous iris caused by *Ditylenchus dipsaci* (Kühn 1858) Filipjev 1936, and experiments on its control by bulb treatment." 15 (5), 175-181.

c. NEWTON, W., BOSHER, J. E. & HASTINGS, R. J., 1937.—" The treatment of glasshouse soils with chloropicrin for the control of *Heterodera marioni* (Cornu) Goodey, and other soil pathogens." 15 (5), 182-186.

(88a) Hastings & Newton have carried out experiments to test the capability of the stem eelworm, *Ditylenchus dipsaci* (Kühn) Filipjev, to enter various host plants. Making use of strains of the parasite occurring on red clover, strawberry and narcissus in the Pacific Northwest they experimented by two methods : (i) by clamping glass rings containing the infective larvae of the worms (mixed with moist peat) onto leaves and leaving for 24 hours. This did not work well as the worms lacked oxygen. (ii) by inoculating sterilized soil with worms and then sowing seed of various plants, the resulting seedlings being examined for the presence of the parasite, as soon as they came through the soil, by staining in acid fuchsin-lactophenol. Tables set out the results obtained and these are briefly discussed. T.G.

(88b) Newton, Hastings & Bosher describe the various symptoms of attack on bulbous irises set up by the stem eelworm. They indicate the manner in which infestation is set up in daughter bulbs which are produced annually following the shrivelling up of the parent bulb. This is via the basal plate. Sometimes the bulb tunic is attacked but this is only temporarily. There is no evidence that the parasite ever enters the plant above soil level. The presence of the parasite seems to have no appreciable deleterious effect on the forcing quality of affected bulbs. An account is given of experiments on control of the disease by hot water and chemical treatments. T.G.

(88c) Newton, Bosher & Hastings describe experiments with chloropicrin, calcium cyanamide and cupric potassium cyanide as means of controlling *Heterodera marioni*. Chloropicrin was injected into holes 6 inches deep at the rate of 1 c.c. per square foot ; the soil was left uncovered. Calcium cyanamide was applied at the rate of 1,000 lb. per acre. A cupric potassium cyanide drench—0·25 lb. cupric nitrate, 0·25 lb. potassium cyanide in 10 gallons of water was applied at the rate of 1 gallon per square foot of soil. Tomatoes grown following these treatments gave satisfactory yields. Galls were abundant on the plants grown in the calcium cyanamide plot. A very slight infestation occurred on the plants grown in the plot treated with chloropicrin. No galls occurred following the cupric potassium cyanide drench but there was evidence of injury. M.J.T.

89—Canadian Journal of Research. Section D. Zoological Sciences.

a. CAMERON, T. W. M., 1937.—" Concepts and mechanisms of resistance in helminthic infections." 15 (4), 77-90.

b. MILLER, M. J., 1937.—" The parasites of pigeons in Canada." **15** (4), 91-103.
c. MILLER, M. J., 1937.—" The experimental infection of pigeons and poultry with *Ascaridia* and *Heterakis*." **15** (5), 105-110.
d. RICHARDSON, L. R., 1937.—" *Raphidascaris laurentianus* sp. n. (Ascaroidea) from *Salvelinus fontinalis* (Mitchill) in Quebec." **15** (5), 112-115.
e. WARDLE, R. A., 1937.—" The physiology of the sheep tapeworm, *Moniezia expansa* Blanchard." **15** (6), 177-126.

(89a) Cameron points out the difficulty of finding a suitable terminology for use in helminthic immunology. When the parasite finds all the environmental factors suitable for proper development he suggests the term " compatibility " though no definite line can be drawn between this and the opposing state of " incompatibility." Compatibility bears no relationship to virulence, as in bacteriology. When helminths fail to establish themselves in a host a state of incompatibility may exist, i.e., something essential may be missing from the host or the host may be resistant, i.e., something is present which is inimical to the well-being of the parasite. Such resistance may be of varying degrees. " Age resistance " is probably incompatibility. It is impossible to differentiate between natural and acquired resistance. " Tolerance " or the state in which a host successfully counteracts the ill effects of the parasite is a comparative term. When this balance breaks down, intolerance and a state of clinical disease results. P.A.C.

(89b) Miller describes *Ascaridia columbae*, *Capillaria columbae* and *Echinostoma paraulum* from the domestic pigeon in Canada, the last-named species constituting a first record for North America. The paper also includes a check-list of the parasites of pigeons and notes on their distribution, location in the host and pathogenicity. D.O.M.

(89c) Miller has been unable to infect pigeons with *Heterakis gallinae* or *Ascaridia galli* from chickens. As, however, a strong age immunity to *A. columbae* exists in pigeons he suggests that young pigeons might probably be infected with *A. galli*. He was able to infect young chicks with *A. columbae* and the larvae developed up to 96 hours, after which they were unable to proceed further. P.A.C.

(89d) A new species, *Raphidascaris laurentianus*, is described from the speckled trout in Quebec. The fish was also infected with *Eubothrium salvelini* and *Crepidostomum fausti*. It is differentiated from *R. brachyurus* by the presence of papillae, from *R. cayugensis* by the parallel uteri, and from *R. canadensis* in having equal cephalic alae. This species is smaller than *R. acus*. R.T.L.

(89e) Wardle has carried out experiments on the longevity and water and polysaccharide contents of *Moniezia expansa* in various media. In balanced saline media the longevity was usually from 9 to 12 hours, and this period was reduced by the addition of glucose. The presence in the media of varying amounts of sodium chloride, sugar and amino-acids influenced the water content of the tapeworm. The polysaccharide content, 0·35 to 5·25% of the fresh weight, was unchanged during 6 hours in media which

reduced muscle tonus but decreased in media which encouraged muscle tonus. The polysaccharide content increased when glucose up to 1·0% was added to the medium, but not when the concentration exceeded this amount or when the glucose was replaced by other sugars or amino-acids or glucoproteins. R.H.H.

90—Chinese Medical Journal.

a. WINFIELD, G. F., 1937.—" Studies on the control of fecal-borne diseases in North China. I. Problems and methods." **51** (2), 217-236.
b. HU, C. H. & HOEPPLI, R. J. C., 1937.—" Further study on the migration route of *Spirocerca sanguinolenta* in experimentally infected dogs." **51** (4), 489-495.
c. CH'IN, Y. T., 1937.—" Trichinella infection in a cat in Mukden." **51** (4), 500-501.
d. WINFIELD, G. F., 1937.—" Studies on the control of fecal-borne diseases in North China. II. The distribution of *Ascaris lumbricoides* infestations in a rural population." **51** (4), 502-518.
e. TSO, C. T., 1937.—" Intraocular cysticercosis." **51** (4), 545-548.
f. WINFIELD, G. F., 1937.—" Studies on the control of fecal-borne diseases in North China. III. Family environmental factors affecting the spread of *Ascaris lumbricoides* in a rural population." **51** (5), 643-658.
g. HSU, S. C. & KÊ, C. T., 1937.—" An investigation of 19 communicable diseases in China. (Report for the first year)." **51** (6), 833-850.
h. WINFIELD, G. F. & YAO, T. N., 1937.—" Studies on the control of fecal-borne diseases in North China. IV. Vegetables as a factor in the spread of *Ascaris lumbricoides*." **51** (6), 919-926.
i. McCOY, O. R. & CHU, T. C., 1937.—" *Fasciolopsis buski* infection among school children in Shaohsing and treatment with hexylresorcinol." **51** (6), 937-944.

(90a) " This paper is the first of a series reporting the results of studies on composting as a farm process in North China to control faecal-borne diseases and to increase fertilizers." Winfield surveys the problem and discusses the methods of the four main lines of approach : epidemiology of faecal-borne diseases, study of fly population and breeding (including an estimation of disease-carrying power), adaptation of composting to meet both public health and economic demands, development of a satisfactory latrine. B.G.P.

(90b) Hu & Hoeppli continue in this paper their description of the migration of *Spirocerca sanguinolenta* in dogs [see Helm. Abs., Vol. v, No. 24c]. Five experimentally infected dogs were used to study migration from the wall of the upper thoracic aorta to the oesophagus and the lesions so produced. Autopsies were carried out from 89 to 193 days after infection and although the parasites were found in the oesophageal wall on the 89th day they were also found in the adventitia of the aorta on the 193rd day. Migration between the upper thoracic aorta and the lower portion of the oesophagus caused a marked inflammatory reaction in the intervening connective tissue. In the oesophageal wall a complete fibrosis followed haemorrhagic acute inflammation, abscess and granulation tissue formation. Eosinophilic cells played practically no part in the inflammatory reaction. J.W.G.L.

(90d) Studying the epidemiology of Ascaris infection in some West Shantung villages, Winfield finds a high incidence (81%) combined with a relatively low intensity, as shown by a corrected average egg-count of 14,000 per c.c. He explains this as due to personal habits favourable, and climatic factors slightly unfavourable to the spread of the infection. Comparison with the data of Cort & Stoll for the rainier East Shantung bears this out. B.G.P.

(90f) Winfield presents the results of environmental studies in a group of 83 representative families in an attempt to elucidate the factors involved in making Ascaris infestation widespread and common in West Shantung in North China where the climatic conditions are so unfavourable to hookworm and whipworm infections. The most important factor in the distribution of Ascaris eggs within the household is the defaecation habits of children of pre-school age. Dogs which gain a portion of their subsistence by eating faeces, and the pen-latrine are additional sources of infection. Dust-borne infection is possibly a minor factor. The water supply and fresh vegetables were exonerated in the groups studied by the author. R.T.L.

(90g) Data collected from 204 hospitals in China and covering 29,468 cases suffering from 19 communicable and parasitic diseases have been analysed as to disease incidence, age distribution, occupation and geographical distribution. Ankylostomiasis represented 13·1%, fasciolopsiasis 1·5%, filariasis 0·3%, paragonimiasis 0·1% and schistosomiasis 1·2%. Ten times as many males as females were given hospital treatment for schistosomiasis. R.T.L.

(90h) Winfield & Yao claim that in North China vegetables are a negligible source of infection with *Ascaris lumbricoides* due to the dry climate and the method of applying human excrement fertilizer there. Even in areas where wet methods of utilizing human excrement fertilizer are used the quantitative importance of vegetables is considered unproved. R.T.L.

(90i) An examination of 349 school children, between the ages of 6 and 16, in Shaohsing, China, revealed that 65% harboured *Fasciolopsis buski*: 7% had over 80 worms. One administration of crystalline hexylresorcinol completely eliminated the flukes in 54% of the cases treated. The drug was given between 7 and 8 a.m. A glass of water but no food was allowed for the following 4 hours. Children 13 years of age and over were given 1 g. Under 7 years of age 0·4 g. In about 10% of the cases nausea and abdominal cramps were quite severe. R.T.L.

91—Comptes Rendus des Séances de l'Académie des Sciences.

a. CARRÈRE, P., 1937.—"Quelques métacercaires d'*Atherina mochon* C. V., développement expérimental d'un gastérostomidé." **204** (14), 1086-1087.

b. TCHOU SU & CHEN-CHAO-HSI, 1937.—"Une nouvelle race chinoise d'*Ascaris megalocephala* (type *trivalens*)." **204** (22), 1676-1677.

(91a) A gasterostomid named *Dolichoenterum lamirandi* n. sp. has been developed experimentally 5 to 6 days after feeding *Labrax lupus* with the liver of *Atherina mochon*. A metacercaria of an Acanthostomidae is also present in the musculature of Atherina. R.T.L.

(91b) Tchou Su & Chen-Chao-Hsi state that in north-west China there is a variety (or race) of *Ascaris megalocephala* in which there are constantly present 6 chromosomes. R.T.L.

92—Comptes Rendus des Séances de la Société de Biologie.

a. ZOTTA, G., RADACOVICI, E. & DIMITRIU, O., 1937.—" Un cas de distomatose humaine à *Fasciola hepatica*." **125** (14), p. 82.
b. GALLIARD, H., 1937.—" L'évolution de *Dirofilaria immitis* Leidy chez *Aedes* (*Stegomyia*) *aegypti* et *A. albopictus* au Tonkin." **125** (15), 130-132.
c. DISS, M. A., 1937.—" Biologie de *Fasciola hepatica* L. dans une localisation aberrante." **125** (15), 157-158.
d. CARRÈRE, P., 1937.—" Sur quelques trématodes des poissons de la Camargue." **125** (15), 158-160.

(92b) Galliard suggests that anomalies in the infectivity of *Dirofilaria immitis* to *Aëdes aegypti* and *A. albopictus*, found by different workers, may be due either to confusion with *D. repens* or to the existence of local biological races of *D. immitis*. B.G.P.

(92c) Diss reports a case of *Fasciola hepatica* in a subcutaneous tumour in man, additional to the 7 cases cited by Lièvre in his monograph (1932). Sections showed no genital organs, but the caecal branches contained blood cells and tissue elements. No evidence of hepatic infection has yet been found. B.G.P.

(92d) Carrère contributes four notes on fish trematodes. (i) Cercariae of *Asymphylodora tincae* emerging from *Bithynia tentaculata* encyst in various molluscs, planarians and leeches. The metacercaria will complete its development in *Alburnus bipunctatus* and also in various amphibia; the natural host is *Scardinius erythrophthalmus*, but only in fresh and not in brackish waters. (ii) *Sphaerostoma bramae* from *Anguilla anguilla*, in fresh water only, can also complete its development in *Hyla arborea*. (iii) A metacercaria from *Nereis dumerilli* is probably that of *Deropristis inflata*, frequently found adult in *Anguilla anguilla* in brackish waters. (iv) The author records *Bacciger bacciger* from *Atherina* spp. and *Haplosplanchnus pachysomus* from *Mugil* spp. B.G.P.

93—Deutsche Tierärztliche Wochenschrift.

a. WETZEL, 1937.—" Die Bekämpfung der Invasionskrankheiten unserer Haustiere." **45** (20), 330-331.
b. HEINE, 1937.—" Zur Behandlung finnigen Rindfleisches." **45** (22), 365-366. [Beilage Nr. 11.]
c. WETZEL, R. & ENIGK, K., 1937.—" Zur Biologie von *Graphidium strigosum*, dem Magenwurm der Hasen und Kaninchen." **45** (25), 401-405.

(93a) [Abstract of a paper presented to the Berliner Tierärztliche Gesellschaft.]

(93b) Heine deals briefly with the exposure of beef carcasses to a temperature of −3°C., to destroy *Cysticercus bovis*, on a commercial scale involving the use of automatic thermostats. B.G.P.

(93c) Wetzel & Enigk have investigated the life-history of *Graphidium strigosum* in detail. They find that both the 4th stage larva and the adult worm are equipped with ventral glands of which the function is unknown. Up to the 9th day after infection the 4th stage larva inhabits the excretory ducts of the fundic glands of the stomach. The adult worm lives in the mucus and does not attach itself to the mucous membrane. Contrary to previous opinion the authors found no cases of haemorrhagic gastritis in their heavily infested experimental rabbits. They attribute the resulting anaemia and emaciation of the hosts to disturbances of the digestive system. Infective larvae are found to have very little resistance to desiccation so that *G. strigosum* is restricted to areas having a damp sub-soil or to rainy seasons. K.S.

94—Farmers Weekly.

a. WINTON, D., 1937.—" Liver fluke : a wet season danger to sheep." **6** (21), p. 22.

(94a) Winton recommends broadcasting " Finely powdered copper sulphate mixed with 8 parts of dry sand and sown at approximately 2½ cwts. per acre " for controlling *Limnaea truncatula*. The dressing is best applied early in June and repeated towards the end of July. B.G.P.

95—Farming in South Africa.

a. MÖNNIG, H. O., 1937.—" Worms in sheep. Different types and their control." 12 (133), 161-168.

96—Field.

a. PARNELL. I. W., 1937.—" Redworm in horses. III." **169** (4384), p. 38.
b. PARNELL, I. W., 1937.—" Redworm in horses. IV." **169** (4385), p. 87.

(96a & b) [For parts I and II of this paper see Helm. Abs., Vol. V, No. 5. For abstracts of complete article see below No. 146a.]

97—Geneeskundig Tijdschrift voor Nederlandsch-Indië.

a. KARIADI, 1937.—" Aanteekeningen over filariasis." **77** (15), 912-921.
b. ELSBACH, E. M., 1937.—" Orienteerend malaria- en filaria-onderzoek in Nieuw-Guinea." **77** (17), 1036-1054.
c. BONNE, C., 1937.—" Over sparganosis in Nederlandsch-Indië." **77** (18), 1119-1121.
d. HEIJDE, C. G. VAN DER, 1937.—" Samenvatting van een onderzoek naar microfilariadragers onder de Chineeschen arbeider bij de Bankatinwinning op Banka." **77** (21), 1288-1297.
e. ELSBACH, E. M., 1937.—" *A. barbirostris bancrofti* als overbrenger van *Filaria bancrofti*." **77** (25), 1536-1543.

(97a) Kariadi discusses the incidence of Filariasis bancrofti in the neighbourhood of the health resort Manokwari on the north coast of New Guinea. The incidence, about 40%, increases with age, and there is a marked nocturnal periodicity of peripheral microfilariae. B.G.P.

(97b) Elsbach discusses the incidence of *Wuchereria bancrofti* and malaria in men, women and children in the basin of the river Digoel in south-western New Guinea, in relation to the mosquito vectors. B.G.P.

(97c) Bonne considers it possible that infection of man with sparganosis in the Dutch East Indies may occur *per os*, by swallowing either infected cyclops or infected frog's flesh. A sparganum found free in the body cavity of a monkey, and others occurring commonly in frogs, have been successfully fed to cats and the adult worms identified by Faust as *Diphyllobothrium ranarum*. B.G.P.

(97d) Van der Heijde finds that 2·5% of the coolies in the Banka tin mines carry *Microfilaria malayi*, without obvious pathological effect and without detriment to their work. B.G.P.

(97e) Elsbach shows that *Microfilaria bancrofti* will develop to the infective stage in *Anopheles barbirostris bancrofti*. Natural infections of around 10% of mosquitoes were found, while the experimental infection index varied from 25% to 71%. This confirms Backhouse's view that in New Guinea the malaria vectors also carry *Mf. bancrofti*. B.G.P.

98—Haematologica.

a. RAVETTA, M., 1937.—"La botriocefalosi. (Studio sperimentale)." **18** (1), 69-111.

(98a) Ravetta has compared the host-reactions of the hedgehog and dog, respectively, to the sparganum and adult of *Diphyllobothrium erinacei*. Even massive infections in the hedgehog cause little or no disturbance, whereas in the dog a fatal disease often occurs. Serologically, extracts of adult worms give complement deviations with sera of dogs infected with this and other worms but no deviation with infected hedgehog sera. Larval extracts give no deviations. Similarly, anaphylaxis is much more marked with extracts of adult worms, as is also toxic action. B.G.P.

99—Illinois Biological Monographs.

a. BEAVER, P. C., 1937.—"Experimental studies on *Echinostoma revolutum* (Froelich), a fluke from birds and mammals." **15** (1), 1–96.

(99a) Beaver describes in detail the morphology and development of the life history stages, from a variety of hosts. He finds the only reliable diagnostic character to be the arrangement of the 37 cephalic spines, all other characters varying widely in different hosts. Experimental infections were produced in various birds and mammals, and adult specimens were successfully transferred from one type of host to another, the life of the parasite often being prolonged. Study of specimens and literature of other workers has resulted in many forms being brought into synonymy. *Cercaria helvetica* XXIV Dubois and *Cerc. trivolvis* Cort are synonyms of *C. Echinostomi-revoluti*. Of the 17 other species having 37 cephalic spines the following are listed as synonyms : *Echinostoma echinatum*, *E. miyagawai*, *E. cinetorchis*, *E. armigerum*, *E. coalitum*, *E. mendax*, *E. paraulum*, *E. columbae*, *E. limicoli*. The other 8 species are regarded as probable synonyms, but it has not been found possible to arrive at any decision in regard to them. E.M.S.

100—Imperial Bureau of Agricultural Parasitology. Publications.

a. LAPAGE, G., 1937.—" The effects of some natural factors on the second ecdysis of nematode infective larvae." 25 pp.

(100a) [For abstract of this paper see Helm. Abs., Vol. IV, No. 627a.]

101—Indian Journal of Medical Research.

a. NAPIER, L. E. & DAS GUPTA, C. R., 1937.—" Haematological studies in Indians. Part VI. Investigations in 100 cases of marked anaemia amongst tea-garden coolies." **24** (3), 855-909.

(101a) Napier & Das Gupta found no case of pernicious anaemia amongst the 100 anaemic tea-garden coolies examined. On the contrary, the anaemia, which was very fully investigated, was of the microcytic-hypochromic type and yielded readily to massive doses of iron. Hookworm infection was the main cause, but in association with other factors, since effective anthelmintic treatment did not alone cure the anaemia. Dietetic treatment alone was also ineffectual. B.G.P.

102—Indian Medical Gazette.

a. UKIL, A. C. & GANGULI, S. K., 1937.—" A case of hydatid cyst of the lung, with post-operative tuberculous involvement." **72** (4), p. 244.

b. IYENGAR, M. O. T., 1937.—" Public health aspects of filariasis in India." **72** (5), 300-307.

(102b) Iyengar points out that there are no adequate data on the distribution of filariasis in India, although the disease is known to be widespread and to be a cause of considerable incapacitation and sickness. In particular, the differential distribution of *Wuchereria bancrofti* and *F. malayi* is known in only the barest outline. This is unfortunate, since the two species require quite different control measures, and much might be done to eliminate *F. malayi* by clearing the water plant *Pistia* which in nature is essential in the life-cycle of the carrier, *Mansonioides* spp. B.G.P.

103—Indian Veterinary Journal.

a. RAHIM-UD-DIN, M., 1937.—" A study of some sheep diseases." **13** (4), 362-366.

(103a) Muhammad Radhim-ud-din describes briefly the symptoms and treatment of cases of parasitic bronchitis, strongylosis, monieziasis, ascariasis, and gid occurring in sheep at Hosur Cattle Farm. J.W.G.L.

104—Journal of the American Medical Association.

a. TENENBAUM, J., 1937.—" Echinococcus cyst of kidney." **108** (20), 1704-1705.

105—Journal of the American Veterinary Medical Association.

a. ANON, 1937.—" Report of committee of parasitic diseases." [In : Report of the Proceedings of the 40th Annual Meeting of the United States Live Stock Sanitary Association.] **90** (3), 346-352.

b. GRAVES, E. F., 1937.—" *Dioctophyme renale* in mink." **90** (4), 531-532.
c. GRAVES, E. F., 1937.—" *Paragonimus westermani* in mink." **90** (5), 667-668.
d. JERSTAD, A. C., 1937.—" Further records of the gizzard worm, *Amidostomum anseris*, in the State of Washington. Report of cases in wild waterfowl." **90** (6), 785-786.

(105a) Considerable progress in the control of some parasites of major importance among farm stock, and the measures by which it has been achieved are reported by the U.S. Live Stock Sanitary Association. Hygienic measures not only control kidney worm in pigs but also materially reduce infection with ascarids, lungworm and nodular worm. Liver fluke in sheep and cattle is primarily controlled by adequate drainage of pastures and only secondarily by killing snails with copper sulphate. Cestodes in poultry constitute a more difficult problem owing to the prevalence of house flies and dung beetles which are the intermediate hosts of the more common forms. Control of screw worm fly and coccidiosis is also considered. P.A.C.

(105b) Graves records a case of *Dioctophyme renale* in a mink at Wisconsin State Fur Farm, the second case that has come to his notice. The only abnormal finding was great enlargement of the right kidney, distension being caused by the presence of a male and a female worm measuring 17½ inches and 19 inches respectively. J.W.G.L.

(105c) Graves records the symptoms of a case which proved fatal of a wild mink heavily infected with *Paragonimus westermanni*. J.W.G.L.

(105d) Jerstad records the presence of *Amidostomum anseris* in the gizzards of certain wild waterfowl—in 3 specimens of *Branta* spp. and 1 of *Mareca americana*, the latter being a new host record. Erosion of the keratinoid layer was noticed but the birds did not seem to be seriously inconvenienced by the presence of the worms. P.A.C.

106—Journal of Animal Ecology.

a. WARWICK, T., 1937.—" The occurrence of disease among muskrats (*Ondatra zibethica*) in Great Britain during 1934." **6** (1), 112-114.
b. LYSAGHT, A. M., 1937.—" An ecological study of a thrips (*Aptinothrips rufus*) and its nematode parasite (*Anguillulina aptini*)." **6** (1), 169-192.

(106a) Only 1 out of 440 muskrats examined in Shropshire (England) showed signs of helminth disease. There was a slight infection of the liver with *Capillaria hepatica*. The animal was otherwise in good condition. R.T.L.

(106b) Miss Lysaght has made, during 1933-35, observations on the distribution of the Thysanopteron, *Aptinothrips rufus*, and its nematode parasite, *Anguillulina aptini*, on 11 plots of the classical field Park Grass at Rothamsted Experimental Station, England, to see whether the difference in abundance of the parasite was significant or fortuitous. Additional knowledge of the biology of the parasite was gained [see Helm. Abs., Vol. V, No. 60h] and it was shown to be possible for the nematode to complete its life-cycle without utilizing the soil, the evidence pointing to the grass sheaths being the habitat of the free-living stage. The nematode was rarely found on

2 of the plots where there was a very rank growth of *Holcus lanatus* and this difference in distribution was constant during 1933 and 1934 ; the coarseness of this growth appeared to exert an unfavourable effect on the parasites although infected hosts were bred on a more delicate growth of *H. lanatus* under greenhouse conditions. Other factors which might affect the distribution of the nematode are discussed. The author's observations indicate that parasitism does not appear to exert a profound influence on the abundance of the thrips population. J.N.O.

107—Journal of the Bath and West and Southern Counties Society.

a. THOMAS, J. F. H., 1937.—" Causes of loss in sheep." Ser. 6, **11**, 34-42.
b. WALTON, C. L., 1937.—" *Anguillulina dipsaci* (Kühn) as a cause of parsnip ' canker '." Ser. 6, **11**, 111-114.
c. WALTON, C. L., OGILVIE, L. & HICKMAN, C. J., 1937.—" The effect of nitrogenous fertilisers on potatoes affected with potato ' sickness '." Ser. 6, **11**, 129-134.

(107a) Thomas considers that worm infestation is the most serious problem that flock-owners have to face in Britain, and warrants his suggestion that " a small army of research workers . . . should be marshalled to study the whole problem in the closest co-operation." He points out that in certain districts a heavier rate of stocking is possible without loss than in others, and that roots grown after catch crops on the Cotswolds are liable to cause serious infestation whereas on certain chalk soils this rotation very rarely causes trouble, though occasionally very serious outbreaks of gastritis do occur on chalkland arable farms. R.T.L.

(107b) Walton describes the symptoms of a cankerous disease of parsnips caused by *Anguillulina dipsaci* in which the crown of the roots shows extensive discoloured areas, the leaves are often much curled and the leaf-stalks swollen and stunted. Results of trials are presented which show that the parasites attacking parsnips and onions are reciprocally infective. T.G.

(107c) Walton, Ogilvie & Hickman carried out field trials to determine the effects of sulphate of ammonia and calcium cyanamide, each applied at the rates of 3 and 10 cwt. per acre, on land infested with *Heterodera schachtii*. Yields are given, together with cyst counts taken from measured lengths of root. Increased yields were produced by all four treatments. Percentages are given of obviously diseased and apparently healthy plants in each plot. Yields are shown to be roughly proportional with the percentage of apparently healthy plants. Estimations of nitrogen and silica-free ash in young leaves show that percentages of nitrogen were constantly higher in apparently healthy than in obviously diseased plants, but that no such correlation existed in the percentage of ash. No correlation is shown between cyst count and any other result obtained, and there is no evidence of reduction in eelworm population. M.J.T.

108—Journal of the British Goat Society.

a. ANON, 1937.—" Fluke in goats." [Correspondence.] **30** (4), 84-85.

109—Journal of the Chemical Society. London.

a. HEMS, B. A. & TODD, A. R., 1937.—" Anthelmintics : Kousso. Part I. Protokosin." pp. 562-566.

(109a) Hems & Todd have isolated a crystalline compound, protokosin, from an ethereal extract of kousso, i.e., the dried female flowers of *Hagenia abyssinica*. They describe its preparation and properties and note that the properties and the reactions of protokosin resemble those shown by compounds isolated from the anthelmintic *Aspidium filix mas*. They assume that protokosin is a derivative of methylenebisphloroglucinol. The separation of α-kosin and β-kosin from protokosin are also described.

K.S.

110—Journal de Chirurgie.

a. DÉVÉ, F., 1937.—" L'échinococcose secondaire de la plèvre." **49** (4), 497-535.

111—Journal of Helminthology.

a. FRANKLIN, M. T., 1937.—" The effect on the cyst contents of *Heterodera schachtii* of the cultivation of maize on potato sick land." **15** (2), 61-68.
b. FRANKLIN, M. T., 1937.—" The survival of free larvae of *Heterodera schachtii* in soil." **15** (2), 69-74.
c. FRANKLIN, M. T., 1937.—" On the survival of *Heterodera marioni* infection out-of-doors in England." **15** (2), 75-76.
d. EDWARDS, E. E., 1937.—" Field experiments on control of the ' potato-sickness ' associated with the nematode, *Heterodera schachtii*." **15** (2), 77-96.
e. BHALERAO, G. D., 1937.—" Studies on the helminths of India. Trematoda IV." **15** (2), 97-124.
f. BERGHE, L. VAN DEN, 1937.—" A morphological study of bovine schistosomes." **15** (2), 125-132.

(111a) Franklin found that when maize was grown on land infected with the potato strain of *Heterodera schachtii* there was a reduction in the viable content of the cysts as estimated by dissections. In field experiments the viability of the cysts decreased from 36·03% to 23·37% in one season. This is a reduction of 34·66% as compared with 16·01% on control plots where lupins were grown. In pot experiments *Alopecurus pratensis* caused a reduction in viability of 34·27%, yellow maize of 52·45%, white maize of 53·85% and meadow grasses of 72·75%. Maize is suggested as a useful crop to grow on land infected with the potato strain of *H. schachtii*. M.T.F.

(111b) Free larvae of the potato strain of *Heterodera schachtii* were found to survive in soil kept free from plants out-of-doors for 9 months, from September to June. Under indoor conditions living larvae were still present in moist soil after 16 months. M.T.F.

(111c) Soil heavily infected with *Heterodera marioni* was still infective to tomato plants after 16 months out-of-doors with no plants growing in it, although the parasite failed to become established on a field plot. M.T.F.

(111d) Edwards describes field experiments with potash, calcium cyanamide, paradichlorobenzene, ferrous sulphate and ferric oxide designed to control *Heterodera schachtii*. Sulphate of potash was applied at the rate of 11 cwt. per acre, paradichlorobenzene at 5½ cwt., ferrous sulphate at 15 cwt., precipitated and natural ferric oxide at 6 cwt., and calcium cyanamide at 10, 20, 40, 60, 80, 100 cwt. per acre. Growth and condition of the plants, yield and cyst counts were used in assessing the effects of the treatments. Ferrous sulphate, ferric oxide and the heavier dressings of calcium cyanamide had a retarding effect on growth. Crop yields showed that all the treatments had proved advantageous, the greatest increase following calcium cyanamide at 20 cwt. per acre. The cyst content of the soil was greatly increased during the season's growth except on those plots treated with calcium cyanamide at 60, 80 and 100 cwt. per acre. The cyst counts from these plots showed a slight increase, remained practically unaltered and showed a decrease, respectively. M.J.T.

(111e) Bhalerao continues his critical review of Indian trematodes. Keys are given for the species of the genera *Bucephalopsis* and *Phyllodistomum*. *Bucephalopsis karvei* n. sp., *Phyllodistomum shandrai* n. sp., *Paramphistomum maplestoni* n. sp., *P. cuonum* n. sp. and *Helostomatis sakrei* n. sp. are described. A new genus of amphistome, *Neocladorchis* is created for *N. poonaensis* n. sp. from *Barbus dobsoni*. R.T.L.

(111f) Van den Berghe concludes from a critical study of bovine schistosomes in the Belgian Congo that two species each with two varieties are to be recognized, viz., *Schistosoma haematobium* and *S.h.* var. *intercalatum*, and *Schistosoma bovis* and *S.b.* var. *mattheei*. R.T.L.

112—Journal of the Ministry of Agriculture. London.

a. JOHNSON, L. R. & THOMPSON, H. W., 1937.—"Stem eelworm disease of field beans." **44** (2), 130-137.

(112a) Johnson & Thompson deal with disease of field beans (*Vicia Faba*) caused by the stem eelworm, *Anguillulina dipsaci*, observed at various places in Yorkshire especially during 1936. They describe the symptoms of disease on this host and discuss various factors predisposing to attack. Evidence is presented, which supports earlier observations, that if oats preceding beans have suffered from *A. dipsaci* there is a distinct risk that beans may become infested. In addition they show that the weed called Cleavers (*Gallium Aparine*), which can serve as a reservoir host of the oat strain of the parasite, can also become infected by the parasite from beans. Control measures are discussed including the burning of dried bean stalks since the pith frequently harbours the worms, the destruction of ground keeper beans and weeds. T.G.

113—Journal of Oriental Medicine.

a. SAI-RYO, 1937.—"A new anthelmintic, 'Raigan', in taeniasis." **26** (4), 799-845. [In Japanese: English summary p. 62.]

(113a) Sai-Ryo finds that the fungus *Omphalia lapidescens*, known popularly as " Raigan " has a pronounced effect on *Taenia solium*, *T. saginata*, *Hymenolepis nana*, *H. diminuta* and *Dipylidium caninum*, but has no vermicidal action on Ancylostoma, Ascaris, Trichocephalus and Enterobius. The drug is prepared for administration by crushing into a powder: 20 grains are given 3 times daily for four days. K.S.

114—Journal of Parasitology.

a. THOMAS, L. J., 1937.—" *Bothriocephalus rarus* n. sp. a cestode from the newt, *Triturus viridescens* Raf." **23** (2), 119-132.

b. THOMAS, L. J., 1937.—" Environmental relations and life history of the tapeworm *Bothriocephalus rarus* Thomas." **23** (2), 133-152.

c. BYRD, E. E., 1937.—" The intestinal parasites observed in fecal samples from 729 college freshmen." **23** (2), 213-215.

d. WALLACE, F. G., 1937.—" A new *Diplostomulum* from China." **23** (2), 215-217.

e. AMEEL, D. J., 1937.—" The life history of *Crepidostomum cornutum* (Osborn)." **23** (2), 218-220.

f. MOORTHY, V. N., 1937.—" A redescription of *Dracunculus medinensis*." **23** (2), 220-224.

g. BRAND, T.v., 1937.—" Haemoglobin in a larval nematode." **23** (2), p. 225.

h. McMULLEN, D. B., 1937.—" The life histories of three trematodes, parasitic in birds and mammals, belonging to the genus *Plagiorchis*." **23** (3), 235-243.

i. McMULLEN, D. B., 1937.—" A discussion of the taxonomy of the family Plagiorchiidae Lühe, 1901, and related trematodes." **23** (3), 244-258.

j. CORT, W. W. & BRACKETT, S., 1937.—" Two new species of strigeid cercariae from the Douglas Lake Region, Michigan." **23** (3), 265-280.

k. BONHAM, K. & GUBERLET, J. E., 1937.—" Notes on *Microcotyle sebastis* Goto from Puget Sound." **23** (3), 281-290.

l. EKBAUM, E., 1937.—" On the maturation and the hatching of the eggs of the cestode *Triaenophorus crassus* Forel from Canadian fish." **23** (3), 293-295.

m. YOUNG, R. T., 1937.—" Another record of avian schistosomes in North America." **23** (3), 295-296.

n. CORT, W. W. & BRACKETT, S., 1937.—" Identification of strigeid cercariae by differences in their behavior during free life." **23** (3), 297-299.

o. WALTON, A. C., 1937.—" The Nematoda as parasites of Amphibia. III. Studies on life histories." **23** (3), 299-300.

p. MOORTHY, V. N., 1937.—" *Camallanus sweeti* n. sp., a new species of Camallanidae (Nematoda)." **23** (3), 302-306.

q. WILLIAMS, O. L., 1937.—" *Ruzguniella kofoidi* sp. nov., a nematode (Acuriidae) from the Lesser Scamp Duck." **23** (3), 306-308.

r. MUELLER, J. F., 1937.—" A repartition of the genus *Diphyllobothrium*." **23** (3), 308-310.

s. MESERVE, F. G. & COATNEY, G. R., 1937.—" *Taenia saginata*—an unusual case." **23** (3), p. 313.

t. McINTOSH, A., 1937.—" New host records for *Diphyllobothrium mansonoides* Mueller, 1935." **23** (3), 313-315.

u. BRAND, T.v., 1937.—" The aerobic resynthesis of glycogen in *Ascaris*." **23** (3), 316-317.

(114a) Thomas gives a detailed description of *Bothriocephalus rarus* n. sp., stated to be the second species of pseudophyllidean occurring in an amphibian host. He shows that specimens of *Bothriocephalus* from mammals should be referred instead to *Dibothriocephalus*. E.M.S.

(114b) The life history of *Bothriocephalus rarus* is unusual in that the procercoid stage already shows formed bothria. The coracidia are ingested by various species of Cyclops, and develop to mature procercoids in any of three species. Larval newts of the species *Triturus viridescens* are infected by ingesting infected Cyclops. Adult newts may be infected either by devouring infected larval newts or directly by swallowing infected Cyclops. E.M.S.

(114d) *Diplostomulum mutadomum* n. sp. is abundant at Canton in the muscles of a number of vertebrates including *Natrix piscator*, *N. stolata*, *Enhydris chinensis*, *Elaphe radiata*, *Eumeces chinensis*, and *Rana* spp. Apparently the same species occurs in the local shrew *Suncus coerulus*. Rats, chicks and ducklings were experimentally infected. The new species is compared with the 6 larval *Diplostomulum* which have been recorded. R.T.L.

(114e) Ameel outlines in brief the life cycle of *Crepidostomum cornutum*, parasite of *Ambloplites rupestris* and of *Aplites salmoides*. Miracidia hatch into water, the first intermediate host being a species of the mollusc, *Sphaerium*, where the parasite develops through the redia to the cercaria. The latter penetrates and becomes encysted within the cardiac region of the crayfish, *Cambarus immunis*, in the form of a metacercaria. E.M.S.

(114f) Moorthy has successfully repeated Russian work by infecting puppies with *Dracunculus medinensis*. The anatomy of the male is described in detail. A vagina has been found 14·5 cm. from the anterior end in a female 31·5 cm. long. R.T.L.

(114g) Haemoglobin has so far only been reported from adult *Ascaris lumbricoides* and *Parascaris equorum*. It has been found for the first time, by v. Brand, in a larval nematode, viz., in encapsuled immature stages of *Eustrongylides* sp. [?] from *Fundulus diaphanus menona*. R.T.L.

(114h) The species *Plagiorchis muris*, *P. micracanthos* and *P. proximus* all develop in *Stagnicola emarginata angulata* and encyst in aquatic insects. Adults were obtained experimentally in mice. In *P. muris* and *P. proximus* the Xiphidiocercariae formed metacercariae without leaving the sporocysts. R.T.L.

(114i) All trematodes which develop from Xiphidiocercariae are placed in the superfamily Plagiorchioidea. Four families are recognized ; Plagiorchiidae type *Plagiorchis* Lühe, 1899, Macroderoididae n.f. type genus *Macroderoides* Pearse, 1924, Renideridae type genus *Renifer* Pratt, 1902 and Haplometridae n.f. type genus *Haplometra* Looss, 1899. Only those groups in which something of the life history is known have been considered. R.T.L.

(114j) The new strigeid cercariae *Cercaria yogena* n. sp. and *C. dohema* n. sp. are described in detail and compared with other strigeid cercariae.

The daughter sporocysts show distinct specific differences. The first intermediate host is *Stagnicola emarginata* in Michigan. Both species penetrate certain fresh water fish. R.T.L.

(114k) It is recorded that 90% of rock cods from the Puget Sound, *Sebastodes maliger* and *S. caurinus*, are infected with *Microcotyle sebastis* Goto and a detailed study of the microscopical anatomy is given. R.T.L.

(114l) Ekbaum differs from Newton regarding the measurements of the coracidia of *Triaenophorus crassus* which is the same species as that described by Newton under the name *T. tricuspidatus*. Whereas Newton did not find any sexual development of the parasite between May and August, Ekbaum finds fully developed eggs ready to hatch in May. *Diaptomus oregonensis* is presumed to be one of the intermediate hosts in Canada. R.T.L.

(114m) On scanty material a new avian schistosome, not referable to any known genus, is described but not named from the rectum of the marbled godwit *Limosa fedoa* shot at La Jolla, N. America. R.T.L.

(114n) Studies on the behaviour of the strigeid cercariae of *Cotylurus communis*, *C. laruei* and *C. yogena* show that these can readily be distinguished in free life. R.T.L.

(114o) The life-histories of *Ophidascaris labiatopapillosa* and *Multicaecum tenuicolle* are briefly outlined. The first, encysted in the muscles and mesenteries of amphibians, were at first regarded as possibly belonging to the genus *Icosiella* but when fed to the snake *Coluber constrictor constrictor* developed into adult *Ophidascaris*. The second form occurs as a larva in *Siren lacertina*., etc, and became adult when fed to a young parasite-free alligator. Both these forms thus alternate between an amphibian and a reptilian host. R.T.L.

(114p) Specimens of cyclops collected from one of the step wells in Chitaldrug, India, were found to be naturally infected with *Camallanus* larvae. The adults occur in the fish *Ophicephalus gachua* and are described under the name *C. sweeti* n. sp. This parasite appears to require *two* intermediate hosts, viz., *Cyclops leuckarti* and *Barbus puckelli* or *Lepediocephalocythys thermalis* before being able to become adult in *O. gachua*. R.T.L.

(114q) A brief description is given of *Ruzguniella kofoidi* n. sp. from the gizzard wall of a duck *Nyroca affinis* taken near Bay, California. This is the first record of this genus in N. America. R.T.L.

(114r) At least 3 different structural types of generic value occur in the present genus *Diphyllobothrium*. The first includes *D. latum* and its relatives, the second *Spirometra* n. g. for *Spirometra erinacei* Rud., the third an undetermined species in the seal related to *D. lanceolatum*. The type of *Diphyllobothrium*, viz., *D. stemmocephalum* has a scolex, according to Cobbold, which is suggestive of the third type but its long neck recalls the first and second. R.T.L.

(114s) A case with multiple infection with 10 *Taenia saginata* is recorded. R.T.L.

(114t) *Diphyllobothrium mansonioides*, of which the plerocercoid occurs in the cotton mouse *Peromyscus gossypinus gossypinus*, has been identified by McIntosh in material collected from the bob-cat *Lynx rufus floridanus*. R.T.L.

(114u) Marked differences were noted in the metabolism of *Ascaris lumbricoides* kept aerobically and anaerobically by using Pflüger's method for glycogen determination. R.T.L.

115—Journal of Tropical Medicine and Hygiene.

a. O'CONNOR, F. W. & BEATTY, H. A., 1937.—" The abstraction by *Culex fatigans* of *Microfilaria bancrofti* from man." **40** (9), 101-103.
b. CAWSTON, F. G., 1937.—" The effect of fish culture on Fasciola infection and schistosomiasis." **40** (9), 103-104.
c. SCOTT, J. A., 1937.—" Observations on mortality and morbidity from schistosomiasis in Egypt." **40** (11), 125-132.

(115a) O'Connor & Beatty give a series of experimental results which appear to show that *Culex fatigans* can abstract many more *Microfilaria bancrofti* than occur in the same quantity of blood abstracted by finger prick. R.T.L.

(115b) Cawston advocates the trial of fish culture for the control of bilharziasis and fascioliasis in South Africa. R.T.L.

(115c) In this paper Scott condenses the observations recently published by him in the American Journal of Hygiene [see above, No. 71b] on the irregular distribution of the schistosomes in Egypt and its causes. He is of opinion that the mortality rates at present recorded are much too low and that schistosomiasis is actually the primary cause of many deaths recorded as due to sequelae and suggests a classification of cases based on the proportionate disability among groups of people, e.g., I. Incapacitated (a) recovery improbable and (b) cure possible: II. Inefficient (a) working part-time, (b) output reduced and (c) occupation changed to less strenuous kind: III. Able-bodied (a) carriers and (b) uninfected. R.T.L.

116—Journal of the Washington Academy of Sciences.

a. PRICE, E. W., 1937.—" North American monogenetic trematodes. I. The superfamily Gyrodactyloidea." **27** (4), 146-164.
b. DIKMANS, G., 1937.—" A note on the members of the nematode genus *Trichostrongylus* occurring in rodents and lagomorphs, with descriptions of two new species." **27** (5), 203-209.

(116a) Price gives brief diagnoses for the known genera of the superfamily Gyrodactyloidea and mentions the species, noting the instances in which the parasites have been reported from North American hosts. R.T.L.

(116b) To the 7 species of the genus *Trichostrongylus* already recorded from rodents and lagomorphs Dikmans adds *T. ransomi* n. sp. from a rabbit (probably *Sylvilagus floridanus alacer*) and *T. texianus* n. sp. from a prairie dog, *Cynomys ludovicianus arizonensis*. A key to the species of *Trichostrongylus* from this group of hosts is appended. D.O.M.

117—Lancet.

a. MAHFOUZ FIKRI, M. & GHALIOUNGUI, P., 1937.—" Ancylostoma anaemia." **232** (5927), 800-802.
b. MINCHIN, R. L. H., 1937.—" Cysticercosis as a cause of epilepsy in a diabetic Indian." **232** (5928), 865-867.
c. SMITHERS, D. W., 1937.—" Cysticercosis as a cause of epilepsy." **232** (5930), p. 1016.
d. KENAWY, M. R., 1937.—" Continuous venous hum in bilharzial cirrhosis of the liver." **232** (5935), p. 1281.

(117a) An estimation of the glucose tolerance of 18 cases of unmixed ancylostome infection shewed that in 12 cases the hyperglycaemic response was abnormal. Interference with absorption is in some way caused by the presence of the worms and by their bites. R.T.L.

118—Medical Journal of Australia.

a. BEARUP, A. J., 1937.—" A search for *Trichinella spiralis* in cadavers in Australia." 24th Year, **1** (14), 504-505.
b. PENFOLD, H. B., 1937.—" The signs and symptoms of *Taenia saginata* infestation." 24th Year, **1** (15), 531-535.
c. PENNINGTON, A. H., 1937.—" Primary pelvic hydatid cyst in a female." 24th Year, **1** (15), 545-546.
d. PENFOLD, H. B., 1937.—" The life history of *Cysticercus bovis* in the tissues of the ox." 24th Year, **1** (16), 579-583.

(118a) Bearup has examined microscopically small portions of diaphragms from 119 cadavers from dissecting rooms in Adelaide, Melbourne and Sydney, and reports finding 3 positive cases from Sydney. The appearance of the cysts and larvae however indicated infections of long standing, and since the persons infected were foreign-born and resident abroad for varying periods, Bearup concludes that the infections were probably acquired outside Australia. It is recognized that the method used would probably miss light infestations, but the author states that no case of Trichinella in man or animal has yet been shown to have originated in Australia. Previous reports of Trichinella in pigs in Australia were due to an error of diagnosis. V.D.S.

(118b) Penfold does not accept the popular view that the main symptoms of *Taenia saginata* infestations are large appetite, loss of weight, nervous irritability and *pruritus ani et nasi*. He affirms that the symptomatology may be similar to that of duodenal or gastric ulcer, cholelithiasis and very occasionally appendicitis. The signs and symptoms found in 100 cases are tabulated. The most frequent symptoms were digestive disturbances and giddiness. A definite eosinophilia (13%) occurred once only, while there was a relative lymphocytosis in 16 out of 20 patients examined. R.T.L.

(118d) By experimental infection of 30 oxen Penfold has shown that the number of cysticerci developed 3 months after with a dose of 400,000 fresh eggs of *Taenia saginata* was 3,000 to 6,000. The degree of infestation varied considerably in different animals of the same age and the same degree of development of the cysts also varied considerably in different animals and even in the same animal. From 6 weeks onward an irregularly increasing

percentage of cysts were degenerated: practically all died in 3 months. In some animals practically all cysts 65 weeks old had been completely absorbed but in one ox 2 years were required. In oxen 18 months old cysts live longer than in oxen 4 years old. There is no marked age immunity. R.T.L.

119 –Medical Parasitology and Parasitic Diseases.

a. KONUS, E. M. & JAKOUBOVITCH, S. A., 1937.—"Réactions cutanées d'après Fülleborn comme méthode de diagnostic de l'ascaridose chez les enfants préscolaires." **6** (1), 107-115. [In Russian: French summary pp. 114-115.]

b. SCHULZ, R. E. & SHIKHOBALOVA, N., 1937.—"Les réactions cutanées allergiques dans les helminthoses." **6** (1), 116-133. [In Russian.]

c. MALEVITZKAJA, M. A., 1937.—"Sur la présence d'opistorchose dans le Bassin du Dniepre." **6** (1), 135-136. [In Russian.]

d. ELPERIN, M. A., 1937.—"Sur la présence d'opistorchose dans le Bassin du Fleuve Bouge." **6** (1), 137-138. [In Russian.]

e. KRASHENINNIKOV, S. & EFIMOV, A., 1937.—"Sur l'expansion des invasions d'opistorchose parmi les animaux carnivores en Ukraine." **6** (1), 138-140. [In Russian: French summary p. 140.]

(119a) Using antigen obtained from dried Ascaris by Fülleborn's method, Konus & Jakoubovitch investigated the skin reactions in ascariasis among children. In 68·5% the results were apparently accurate. A few cases giving positive skin reactions seemed to be free from Ascaris, though further anthelmintic action demonstrated the presence of the worms in practically all. The authors consider that further work on this subject is worth while. P.A.C.

(119b) Schulz & Shikhobalova review allergic skin reactions in cases of infection with hydatid, Trichinella, Filaria, schistosomes, cysticerci, Ascaris, hookworm, Trichuris, Enterobius, Strongyloides and tapeworms. They briefly discuss the technique and the nature and evaluation of the reaction, both immediate and delayed. The immediate reaction may occur as a result of the passive transfer of local susceptibility. In spite of a general lack of specificity in these reactions, they are a valuable aid in the diagnosis of parenteral infections. The drawback of their persistence after the death or removal of the parasite is less marked in the case of delayed reactions.

B.G.P.

(119c) 38·9% of the cats and 12·5% of the dogs examined in various villages on the Ross river were found to be infected with Opisthorchis. A table indicates the incidence and intensity of the infection in various localities of the Ukraine. R.T.L.

120—Military Surgeon.

a. JOHNSTON, C. C., 1937.—"*Necator americanus* in Puerto Rican troops." **80** (2), 137-139.

121—New England Journal of Medicine.

a. SPINK, W. W., 1937.—" Trichinella antigen : further observations on its use in the diagnosis of trichinosis." **216** (1), 5-8.

(121a) As a result of 4 years observations Spink believes that the results obtained from the skin test and precipitation reactions in trichinosis are so constant as to warrant their use as a routine. The immediate reaction in the skin test is not obtained until a fortnight after infection, when it appears 5 minutes after the injection and reaches a maximum in an hour. The delayed reaction does not always occur but when present it reaches its maximum 18 to 24 hours after injection and gradually subsides over a period of days. Precipitins do not appear in the blood earlier than the second week after infection. P.A.C.

122—Norsk Veterinaer-Tidsskrift.

a. GRINI, O., 1937.—" *Strongyloides papillosus* (*suis*, *longus*) hos griser." **49** (1), 1-13. [German summary, pp. 11-12].

(122a) Grini finds that *Strongyloides papillosus* is a common and serious cause of disease in pigs of from one week to three months old in Norway. In addition to its own pathological effect, it apparently predisposes to secondary bacterial invasion. Some success has attended treatment with either tartar emetic or santonin and areca nut. B.G.P.

123—North American Veterinarian.

a. PRICE, E. W., 1937.—" A note on the occurrence of a trematode of the genus *Clinostomum* in a chicken." **18** (4), 33-36.

(123a) Price describes a single specimen of *Clinostomum* found in the mucosa of a chicken's trachea. The worm is provisionally identified as *Clinostomum attenuatum*, and it is presumed the chicken was infected by eating a frog containing the metacercaria. E.M.S.

124—Okayama-Igakkai-Zasshi.

a. SUGA, Y., 1937.—" Beiträge zur statistischen Kenntnis der Distomiasis." **49** (3), 623-634. [In Japanese : German summary pp. 623-624.]

b. MURAKAMI, S., 1937.—" Über die Eischalenbildung bei den Trematoden." **49** (4), 706-768. [In Japanese : German summary pp. 703-705.]

(124a) In 545 post-mortem dissections at the Okayama Pathology Institute, Suga has found 43 cases of liver fluke. He discusses the co-incidence of this infection with such related conditions as change in liver weight, gall stones, ascites, icterus, and liver carcinoma. In five cases the flukes were found in the pancreas. B.G.P.

(124b) Murakami describes the formation of the egg-shell, in Fasciola, Paragonimus, Metagonimus and Clonorchis, from shell-granules within the yolk-cells and produced in the yolk-glands. The shell forms, in the oötype and in the first part of the uterus, by the extrusion and conglomeration of these granules, the operculum being formed last. [There are numerous drawings and microphotographs on 11 plates, following the Japanese text.] B.G.P.

125—Parasitology.

a. STEWARD, J. S., 1937.—" The occurrence of *Onchocerca gutturosa* Neumann in cattle in England, with an account of its life history and development in *Simulium ornatum* Mg." **29** (2), 212-219.

(125a) *Onchocerca gutturosa* has been found by Steward in cattle in Cambridgeshire. They live in the connective tissue on or between the flat surfaces of the cervical ligament and in the connective tissue joining the spleen to the rumen. The microfilariae occur in the skin at about 1 mm. from the surface. *Culicoides nebeculosus*, the vector of *O. cervicalis*, proved refractory but of *Simulium ornatum* over 40% were experimentally infected. Only partial development occurred in *S. erythrocephalum*. R.T.L.

126—Phytopathology.

a. GODFREY, G. H. & HAGAN, H. R., 1937.—" Some measurements of detrimental effects of the root-knot nematode on the pineapple plant." **27** (4) 515-530.

b. ARNDT, C. H. & CHRISTIE, J. R., 1937.—" The comparative rôle of certain nematodes and fungi in the etiology of damping off, or soreshin, of cotton." **27** (4), 569-572.

c. KREIS, H. A., 1937.—" A nematosis of sweet potatoes caused by *Anguillulina dipsaci*, the stem or bulb nema." **27** (6), 667-690.

(126a) Godfrey & Hagan report statistical studies on pineapple plants in two localities in the Hawaiian Islands where a wide range of intensity of soil infestations with *Heterodera marioni* existed. The degree of infestation was measured by root-gall counts, and the detrimental effects of infestation were estimated by counts of roots, measurements of root and plant growth and yield. Correlations between gall counts and growth measurements were rather low. Gall counts were found to be unreliable as a means of estimating nematode injury after 8 months growth as increased vigour following escape from initial heavy infestation resulted in increased root surface and ultimate high gall count. A positive correlation of 0·57 was found between length of roots and plant weight. M.J.T.

(126b) Arndt & Christie carried out experiments under controlled conditions of temperature and moisture to determine the relative importance of certain nematodes and fungi in the production of damping off or soreshin in cotton seedlings. The nematodes used were *Aphelenchus avenae*, *Aphelenchoides parietinus*, *Cephalobus elongatus* and *Acrobeles bütschlii*. Some of the culture pots for the cotton seedlings were inoculated with nematodes alone, some with fungi alone and some with nematodes plus fungi. Although it was found that certain of the nematodes can set up lesions in the hypocotyls of the seedlings the general conclusion of the authors is that their experiments failed to indicate that the nematodes are of primary importance in the production of damping off. T.G.

(126c) Kreis gives an account of a disease in tubers of sweet potato (*Ipomoea batatas* (L.) Lam.) caused by *Anguillulina dipsaci*. The parasite was found in stored tubers in 6 centres but only once in the field when it was associated with *Heterodera marioni*. Symptoms of disease are described and details are given of the distribution of the parasite throughout an affected

tuber with an estimate of the numbers present. An account is given of experiments to establish transference of the nematodes from diseased to healthy tubers of sweet potato and to Irish potato tubers. Various chemical treatments to eradicate the worms from tubers are discussed as well as a number of biological considerations relative to the disease. Data are presented on the variability exhibited by adult worms, particularly the variations found in females in the distances vulva to anus and anus to tip of tail. The paper ends with a short comparison between the parasite from sweet potato and from certain other hosts. T.G.

127—Policlinico (Sezione Pratica).

a. CIANCARELLI, S., 1937.—"Cisti da echinococco non suppurata della tiroide perforata in trachea." **44** (17), 816-820.

128—Prensa Médica Argentina.

a. GONZALEZ BOSCH, R. & MOSTO, D., 1937.—"Hidatidosis cardíaca. Hidatidosis cardíaca en un paciente con cuadro clínico-electrocardiográfico de infarto de miocardio." **24** (6), 308-318.

129 Proceedings of the Society for Experimental Biology and Medicine.

a. FORBES, J. C. & McCONNELL, J. S., 1937.—"Crystallization of liver fraction protecting against necrosis from carbon tetrachloride or chloroform administration." **36** (3), 359-360.

(129a) As a liver preparation is useful in the prevention of liver necrosis from carbon tetrachloride, Forbes & McConnell have devised a technique for the preparation of the active principle in crystalline form. This is a new purine derivative and has proved successful in the prevention of cirrhosis from chronic carbon tetrachloride poisoning. R.T.L.

130—Proceedings of the United States National Museum.

a. BYRD, E. E., 1937.—"Observations on the trematode genus *Brachycoelium* Dujardin." **84** (3010), 183-199.
b. ZELIFF, C. C., 1937.—"A new species of trematode from the mud-eel (*Siren lacertina*)." **84** (3014), 223-226.

(130a) Byrd has examined amphibia and reptiles from the south-eastern States, and reports the following new parasites: *Brachycoelium mesorchium* n. sp., *B. georgianium* n. sp., *B. ovale* n. sp., *B. dorsale* n. sp., *B. lousianae* n. sp. There is a key to differentiate the thirteen species of *Brachycoelium*. A division of the genus is suggested on the basis of the distribution of the vitellaria. E.M.S.

(130b) Zeliff describes *Cercorchis sirenis* n. sp. from the intestine of *Siren lacertina* in the south-eastern United States. A few organs such as oötype, Laurer's canal, seminal receptacle, oviduct and vitelline receptacle have been stated to be not observed or are not clearly defined. The new species has been separated from the other species of the genus. G.D.B.

131—Public Health Reports. Washington.

a. HALL, M. C. & COLLINS, B. J., 1937.—" Studies on trichinosis. I. The incidence of trichinosis as indicated by post-mortem examination of 300 diaphragms." **52** (16), 468-490.
b. HALL, M. C. & COLLINS, B. J., 1937.—" Studies on trichinosis. II. Some correlations and implications in connection with the incidence of trichinae found in 300 diaphragms." **52** (17), 512-527.
c. HALL, M. C., 1937.—" Studies on trichinosis. III. The complex clinical picture of trichinosis, and the diagnosis of the disease." **52** (18), 539-551.

(131a) Hall & Collins, on the basis of examination of 300 diaphragms from cadavers from 10 hospitals in Washington and 1 in Baltimore, report an incidence of trichinosis of 13·67%. Diaphragms were examined both microscopically and by the digestion method, since microscopic examination usually misses light infestations and the digestion method is of little value where the larvae have died previously. Since live trichinae predominate in light infestations, and dead trichinae in heavy infestations, it is suggested tentatively that the rapidity of calcification may be proportional to the intensity of infestation. Correlated with previous investigations, the incidence of trichinosis in the United States is shown to be approximately 12·5%, a figure which, for several reasons, the authors consider too low. From these figures, it is stated that the United States apparently have the greatest problem of trichinosis of any country in the world, though clinical trichinosis is seldom diagnosed as such. Control measures for the parasite are discussed. V.D.S.

(131b) This second paper by Hall & Collins is an attempt to correlate the incidence of trichinosis of 13·67% found in Washington with the socio-economic conditions of the persons infested. The highest incidence of infestation is found in those groups of persons associated with extensive travelling by sea, such as the Navy and the merchant marine, and in those of military occupations. Persons of low economic-social status show a high incidence of infestation, while those of high economic-social status show a low incidence. White males show a higher incidence of trichinosis than coloured males, the latter tending to be more sedentary by nature, while the civilian population of Washington has an indicated incidence of 14·2%. The mentally deranged groups protected from further exposure to infection by prolonged hospitalization show a very low incidence. In all cases the frequency of infestation in the various groups may be correlated with their food habits, as modified by occupation, social and environmental factors, and consequent degree of exposure to infection. There is apparently an increased incidence of infection with increasing age, due to the time factor

increasing the opportunities for infection, up to an unascertained point at which a mortality factor may come into operation; it is suggested also that infants and premature births should also be examined for the possibility of prenatal infection. The positive results from cases under prolonged hospitalization are believed to give a reliable index of the duration of infection with live Trichinella, and the age at which the larvae may calcify and die, since these cases are protected from further infection by the modern sanitary conditions prevailing in such hospitals. V.D.S.

(131c) Since not one of 222 cases found positive for trichinosis at post-mortem in the United States ever showed a clinical history of the disease, Hall concludes that the symptoms of trichinosis in the majority of cases are atypical, leading to incorrect diagnosis, the so-called typical clinical symptoms seldom being evident. The author lists approximately 50 disease conditions with which the various stages of trichinosis may be confused, and urges that the symptoms of light and medium infestations should be investigated more fully. Laboratory aids to diagnosis are briefly discussed and their limitations pointed out. V.D.S.

132—Revue de Médecine et d'Hygiène Tropicales.

a. DUPRAT, 1937.—" Enquête sur la fréquence des vers intestinaux communs à Sao-Paulo." **29** (2), 94-103.

(132a) Duprat deals with the incidence of helminths in a group of workers and their families at São Paulo, and also in the Rio Grande garrison. Both groups showed an incidence of over 91%, the most frequent parasites being Trichuris, Ascaris and Necator. Tables give incidence by age and sex, multiple infections and treatments. B.G.P.

133—Revista de Medicina Tropical y Parasitología, Bacteriología, Clínica y Laboratorio.

a. MÖNNIG, H. O., 1937.—" On the toxicity of nicotine for sheep and the use of the nicotine-bluestone drench for worms in ruminants." **3** (1), 3-10.
b. SCHWARTZ, B. & PORTER, D. A., 1937.—" Tests with hydrogen peroxide as an anthelmintic." **3** (1), 11-24.
c. CABALLERO Y C., E., 1937.—" Contribución al conocimiento de los nemátodos de las aves de México. II." **3** (1), 25-35.
d. CALVÓ, R., KOURÍ, P. & BASNUEVO, J. G., 1937.—" Porcentaje y distribución geográfica del parasitismo intestinal en Cuba. Provincia: Matanzas. Pueblo: Alacranes." **3** (1), 37-42.
e. ARENAS MARTORELL, R., PEREIRA PÉREZ, R. & WAHLEMBER, A., 1937.—" Afecciones parasitarias del tejido muscular en nuestros animales de matadero. (Bovinos, ovinos, caprinos y porcinos)." **3** (1), 43-45.
f. WRIGHT, W. H., 1937.—" Critical tests with various dyes as anthelmintics for chickens." **3** (2), 125-132.
g. GÓMEZ CAMEJO, M. & VIDAL VIDAL, R., 1937.—" Quiste hidatídico del hígado abierto en las vías biliares." **3** (2), 133-141.
h. BASNUEVO, J. G. & ANIDO, V., 1937.—" Técnicas para el examen parasitológico de heces fecales (según Kourí y Basnuevo)." **3** (2), 171-175.

(133a) Mönnig summarizes the work of various authors on the anthelmintic value of copper sulphate and nicotine sulphate, together with his own work on the toxicity of these drugs in sheep and cattle, and their efficacy against *Moniezia*, *Haemonchus contortus*, *Trichostrongylus* and *Ostertagia*. He recommends using a 1·7% solution of each drug in the following doses: lambs 1 to 3 months, 22·5 c.c., 3 to 6 months, 30 c.c., 6 to 12 months, 45 c.c. and adults 60 c.c., but points out that in order to stimulate the closure of the oesophageal groove in sheep in poor condition it is necessary to precede the dose with 2·5 c.c. of a 10% solution of copper sulphate. K.S.

(133b) Schwartz & Porter have determined the anthelmintic effect of solutions of H_2O_2 administered to white rats and dogs. Doses of 3 and 4 c.c. of 0·5% solution were ineffective against *Nippostrongylus muris* in white rats, but similar doses of 1·0% solution removed from 49·5 to 63·3% of the worms, and 4 c.c. of 1·5% solution removed from 51·5 to 93·3%.

In 7 dogs naturally infested with *Toxocara canis*, doses of 4 c.c. of 1·5% H_2O_2 solution removed from 64·8 to 100% of the worms, and in two dogs infested with *Toxascaris leonina* 16·7 and 83·3% of the worms were removed. The effect of H_2O_2 against *Ancylostoma caninum* was variable; 3 dogs were unaffected by the treatment and in 5 other cases the percentages of worms removed were 37·5, 50, 100, 33·3 and 42·9. The treatment had no effect against *Dipylidium caninum* present in one of the dogs, nor against *Hymenolepis nana*, *Syphacia obvelata* and *Trichosomoides crassicauda* harboured by some of the rats.

The solutions of 1·0 and 1·5% H_2O_2 were somewhat toxic to rats, the mucosa of the stomach becoming inflamed. The ill effects on dogs were slight and of short duration. R.H.H.

(133c) Caballero describes *Physaloptera mexicana* n. sp. from the intestine of *Buteo* sp., and gives brief redescriptions of *Ascaridia colombae* with a list of 11 hosts, and *A. lineata* with 6 hosts. Allowing for a probable lapsus in the discussion on *P. mexicana*, it would appear that the new species closely resembles *P. alata*. B.G.P.

(133e) Arenas Martorell and his collaborators contribute brief notes on Trichinella, *Cysticercus bovis* and *C. cellulosae*. Trichinella probably occurs in Cuba, but is not systematically looked for. *C. bovis* is present in over 3% of Cuban cattle, while *C. cellulosae* is rare. B.G.P.

(133f) Wright finds that repeated doses of gentian violet have a specific anthelmintic action against *Strongyloides avium* in chickens. Brilliant green in single doses was effective against *Raillietina* spp., while azamine and mercurochrome may after further tests prove useful drugs against species of *Raillietina*. A list of drugs which have given negative results is given together with a list of helminths which have proved refractory to all the drugs administered. P.A.C.

134 Riforma Medica.

a. SINDONI, M., 1937.—"Ascaridiasi ed emorragia gastrica mortale." **53** (3), 86, 89-90.

135—Rivista di Parassitologia.

a. PALOMBI, A., 1937.—" Il ciclo biologico di *Lepocreadium album* Stossich sperimentalmente realizzato. Osservazioni etologiche e considerazioni sistematiche sulla *Cercaria setifera* (non Joh. Müller) Monticelli." **1** (1), 1-12.

b. PALOMBI, A., 1937.—" La cercaria di *Mesometra orbicularis* (Rud.) e la sua trasformazione in metacercaria. Appunti sul ciclo evolutivo." **1** (1), 13-17.

c. GIOVANNOLA, A., 1937.—" Su due nuove *Cercariae* studiate in Sardegna." **1** (1), 32-37.

d. CORRADETTI, A., 1937.—" I distomi parassiti dell'*Anopheles maculipennis*." **1** (1), 39-51.

e. BABUDIERI, B., 1937.—" Un caso di filariasi nell'uomo, da *Filaria conjunctivae* Addario, 1885, osservato in Italia." **1** (1), 53-67.

(135a) Palombi has worked out the life-history of *Lepocreadium album* adult in the fishes *Cantharus* spp. and *Oblata melanura*. The first intermediary is either *Conus mediterraneus* or a species of *Nassa*, and the second some pelagic invertebrate. It is probable that *Cercaria setifera* Monticelli is not the same as *L. album* in spite of morphological similarities. B.G.P.

(135b) Finding cercariae and metacercariae of *Mesometra orbicularis* together with leaves of *Posidonia caulini* in the stomach of *Boops salpa*, Palombi deduces that the first intermediary is a gastropod feeding on the plant on the leaves of which the cercariae encyst. The fluke becomes adult in the intestine of *B. salpa*. In the transformation into the metacercaria, the cercarial tail is closely folded around the body. B.G.P.

(135c) Giovannola describes and figures *Cercaria tirrenidis* n. sp. and *C. burti icnusae* n. var., both from *Limnaea palustris* in Sardinia. B.G.P.

(135d) Corradetti redescribes *Agamodistomum martiranoi* Stiles and describes *A. neurogangliorum* n. sp., both of which he found in sections of *Anopheles maculipennis*. The former occurs in the cephalic fat body in addition to the previously recorded locations. The latter is encysted within the nervous tissue of the pharyngeal and thoracic ganglia where it causes an intense cellular reaction. B.G.P.

(135e) Babudieri gives a tabular statement of the facts recorded by observers of the 14 known cases of human infection with *Filaria conjunctivae* and adds a further case observed in a boy at Pieris, Trieste. A plate with 6 figures accompanies the text. R.T.L.

136—Schweizerische Medizinische Wochenschrift.

a. MAINZER, F., 1937.—" Ueber isolierte Lungenbilharziose." **67** (22), 495-496.

137—Science.

a. MUELLER, J. F., 1937.—" Spargana in Natrix." **85** (2213), 519-520.

(137a) Spargana occur in 90% of Natrix in Florida. The definitive host has now been determined experimentally. In the cat both *D. mansoni* and *D. mansonoides* developed. R.T.L.

138—Southern Medical Journal.

a. KING, E. L., FAUST, E. C. & SANDERS, J. T., 1937.—" Intestinal parasitic infections complicating pregnancy." **30** (5), 545-549.

139—Taiwan Igakkai Zasshi.

a. NARIHARA, N., 1937.—" Studies on the post-embryonal development of *Hymenolepis diminuta*. Part I. On hatching of the eggs of *Hymenolepis diminuta*." **36** (4), 713-729. [In Japanese : English summary pp. 730-731.]

b. NARIHARA, N., 1937.—" Studies on the post-embryonal development of *Hymenolepis diminuta*. Part II. On the development of cysticercoid within the definite intermediate host." **36** (4), 732-780. [In Japanese : English summary pp. 780-784.]

c. KAWAI, T., 1937.—" Experimental studies on the clonorchicidal effect of gentian-violet. A supplement : value of Wakeshima's egg counting method as a judgment of anthelmintic effect of drugs against *Clonorchis sinensis*." **36** (5), 923-933. [In Japanese : English summary p. 934.]

d. TOMITA, S., 1937.—" Clinical observations on patients infested with *Hymenolepis nana*, with special reference to changes in their blood pictures." **36** (5), 1043-1055. [In Japanese : English summary p. 1056.]

(139a) The eggs of *Hymenolepis diminuta* are hatched not by chemical action but by the peristaltic action of the intestine. The release of the onchosphere has been studied in artificial media and in the intestine of the larvae of *Ephestia cautella*, an intermediate host. R.T.L.

(139b) The development of the cysticercoid of *Hymenolepis diminuta* takes place in the larvae of *Tribolium ferrugineum* more easily than in *Ephestia* and *Palorus*. This development is influenced by the temperature, being completed in 7 to 9 days at 28° to 34° C. while at 19° to 22° C. it scarcely proceeds at all. The appearances of the cysticercoid at intervals of 14, 38, 62, 88, 110 and 113 hours after experimental feeding of the intermediate host with mature eggs are described and illustrated. Mice were infected experimentally from these cysticercoids. R.T.L.

(139c) Kawai has studied the lethal effect of gentian violet on 7 dogs infected with *Clonorchis sinensis*. 18 mg. of the drug per kilo body weight given every 3 days for 15 days reduced the estimated infection of 49 worms by 61·23%. 18 to 20 mg. per kilo per day for 19 days reduced an estimated infection of 333 worms by 42·32% while in a heavy infection, estimated at 1,215 worms, 10 to 12 mg. per kilo per day reduced the worms by 25·1% in 30 days. Wakeshima's egg counting method was used as the most reliable way of judging the clonorchicidal effect of the drug. R.T.L.

(139d) A varying degree of anaemia was observed in all of 50 cases of *Hymenolepis nana* observed in Formosa. This was due apparently to a diminution in the haemoglobin content of the cells. In 18 of the cases leucocytosis occurred: in 38 of the cases there was an eosinophilia with an associated leucopenia in 35 instances. Lymphocytosis occurred in 23 cases. Where the blood changes were marked there were symptoms of diarrhoea, constipation, hunger pains, fatigue, slight pyrexia, facial pallor, anorexia, headache, melancholia, palpitations, vertigo, insomnia, convulsions, nocturnal enuresis, etc. R.T.L.

140—Tierärztliche Rundschau.

a. LINDAU, H., 1937.—" Zur Ascariasis bei grossen Raubkatzen." **43** (16), 265-267.

b. MATOFF, K., 1937.—" Der Mechanismus der Altersimmunität des Hundes gegen die Trichinelleninfektion." **43** (21), 354-359; (22), 369-373.

c. OPPERMANN, T., 1937.—" Praktische Winke für die Diagnose und Bekämpfung der wichtigsten Schafkrankheiten." **43** (24), 399-401.

(140a) Ascariasis due to *Toxascaris leonina* can become a serious problem among the young large felines in zoological gardens. Lindau reports varying success with a mixture of santonin and kamala, and also with " Valutin " capsules, against this parasite. B.G.P.

(140b) By feeding massive doses of larvae to dogs of varying ages, Matoff has determined that young dogs are much more susceptible to intestinal and muscular trichinosis than older dogs. This age-immunity, however, is not absolute; since at all ages there is a quantitative relation between the dogs' susceptibility to intestinal trichinosis and muscular invasion by the larvae, it is believed that the intensity and duration of intestinal trichinosis determines the degree of muscular invasion. Age-immunity in dogs, therefore, depends on the small number of Trichinella which develop in the intestine of adult dogs, as compared with young dogs; and age-immunity is dependent on the specific conditions in the intestinal tract, which vary with age, and not on conditions in the musculature. Mild infestations are not a result of a heavy mortality of larvae liberated by the adults.

Compared with the number of larvae administered, the number of adult trichinae which develop is very small, the majority of immature forms being passed in the faeces spontaneously or as a result of diarrhoea. This elimination of intestinal trichinae is particularly intensive during the first week after infection, the variations in the numbers of adult trichinae which develop depending on the age of the dog. Adults which develop in the intestine are short-lived, being entirely absent in the intestinal mucosa of dogs killed from the 10th day after infection. V.D.S.

(140c) Oppermann's paper deals with the clinical diagnosis, treatment and control of Haemonchus in sheep. He gives some data on the blood picture, showing that the red-cell count is considerably reduced in heavy

infections. The blood proteins and the albumen/globulin ratio are both usually depressed. For treatment, he reports favourably on subcutaneous injections of " Lentin " in doses of 0·5 to 0·7 mg. given in the morning and again in the afternoon of the same day, after one or two days fasting. Under Control he stresses the danger of wet pastures and the importance of expert examination of faeces. B.G.P.

141—Tijdschrift voor Diergeneeskunde.

a. BAUDET, E. A. R. F., 1937.—" Darmparasieten bij het paard, als oorzaak van koliek." **64** (9), 447-450.

(141a) Of the intestinal parasites of horses only *Ascaris equorum* and *Strongylus* spp. may cause colic. *Ascaris* is not important. Its wandering habits or perforation of the intestine may produce colic. The larval stages of strongyles are more important. The author discusses the migration of *S. vulgaris* larvae, the formation of aneurysms and embolism and the different opinions of various authors on these points. H.M.

142—Tijdschrift over Plantenziekten.

a. HAUSER, G. F., 1937.—" Proeven ter bestrijding van de wortelnematode, *Heterodera marioni*." **43** (6), 131-149. [English summary pp. 148-149.]

(142a) Hauser describes pot experiments with chemicals and fermented horse dung as means of controlling *Heterodera marioni*. Pots containing 12 kg. of sandy soil were treated in each case. Carbon bisulphide was used at the rate of 13, 20 and 30 c.c. per pot; chloropicrin at the rate of 0·6, 1·3, 2·6, 5·2 c.c. per pot with gas-tight paper covers, and 2·6 c.c. without cover; formaldehyde at the rate of 33 and 67 c.c. per pot. Three proprietary chemicals were also used. Gall counts made after 25 days growth of indicator plants showed that some reduction of infection was caused by formaldehyde, a marked reduction followed the carbon bisulphide treatments, and the chloropicrin treatments gave almost complete control. Heavy dressings of fermented horse dung (1 and 1·5 kg. in 13 kg. soil) retarded early growth of tomato plants but growth gradually improved during two months and gall formation was inhibited. M.J.T.

143—Transactions of the American Microscopical Society.

a. ALLISON, L. N. & HOLL, F. J., 1937.—" A new trematode *Pseudorenifer brachyoesophagidius* from a North American snake." **56** (2), 203-205.

b. ABERNATHY, C., 1937.—" Notes on *Crepidostomum cornutum* (Osborn)." **56** (2), 206-207.

c. PIN-DJI CHEN, 1937.—" The germ cell cycle in the trematode, *Paragonimus kellicotti* Ward." **56** (2), 208-236.

(143a) Allison & Holl describe *Pseudorenifer brachyoesophagidius* n. sp. from the intestine of *Thamnophis sirtalis* in the United States (Perrysburg, New York). The new species has been separated from the other species of the genus. A key to the species of *Pseudorenifer* and its diagnosis have been given. G.D.B.

(143b) Encysted progenetic metacercariae of *Crepidostomum cornutum* were found in the crayfish (*Cambarus* sp.) in Oklahoma. These were fed to catfish which later passed abundant eggs in the faeces. The specimens did not increase in size or change in structure. R.T.L.

144—Transactions of the Royal Society of Tropical Medicine and Hygiene.

a. DAY, H. B., 1937.—" Pulmonary bilharziasis." **30** (6), 575-582.
b. AUGUSTINE, D. L., 1937.—" Description of a new filariid from ground doves of St. Croix, Virgin Islands." **31** (1), 47-54.
c. AUGUSTINE, D. L., 1937.—" Observations on living ' sheathed ' microfilariae in the capillary circulation." **31** (1), 55-60.
d. LANE, C., 1937.—" Bancroftian filariasis and the reticulo-endothelial system." **31** (1), 61-80.

(144a) Day summarizes our brief knowledge of pulmonary bilharziasis and describes three cases seen in Egypt. It is explained that cardiac failure of the congestive type in cases of bilharzial cirrhosis may be dependent on pulmonary invasion. An enlarged spleen associated with bilharzial cirrhosis is present in all cases of pulmonary bilharziasis. R.T.L.

(144b) A new genus of Aproctinae named *Vagrifilaria* with *V. columbigallinae* n. sp. as type and only species is described from the West Indian dove *Columbigallina passerina nigrirostris*. It lives in the venous system and the peritoneum and there are sheathed microfilariae in the blood of the host. The new genus approaches *Saurositus* Macfie, 1924. R.T.L.

(144c) When the sheathed microfilariae of the filariid worm *Vagrifilaria columbigallinae* are injected into the frog they actually migrate through the capillaries but after 17 to 30 hours are filtered out of the circulation by the liver, and are apparently finally disposed of there. The " sheath " seen in fixed and stained blood smears of several microfilariae is said to be indiscernible as a distinct structure on these microfilariae in the circulation. The author believes that the sheath is comparable to that of the infective stage of the hookworm larva, viz., the result of an incomplete ecdysis and is not a retained vitelline membrane. R.T.L.

(144d) Lane now advances the view that nocturnal periodicity in infections with *Filaria bancrofti* is caused by two different mechanisms. The rise is caused by a timed parturition by the female worms. The fall is caused by the destruction of the microfilariae by the mobile cells of the reticulo-

endothelial system. The accumulation of these cells and their development into fibroblasts cause lymphatic obstruction and changed lymph conditions favourable to the development of haemolytic streptococci as well as the further growth of fibroblasts and increase of elephantiasis. R.T.L.

145—Urologic and Cutaneous Review.

a. GOLDEY, A., 1937.—" Vesical bilharziasis with chyluria. Report of a case and its cure. (*Schistosoma h[a]ematobium*)." **41** (2), 89-91.

146—Veterinary Journal.

a. PARNELL, I. W., 1937.—" Redworms in horses." **93** (6), 202-212.

(146a) In this general account of redworms in horses originally published in the Field [see above No. 96] Parnell pays particular attention to the control of these parasites and the destruction of their larval stages in manure by various chemicals. The paper also includes a section on the detection of redworm infection. D.O.M.

147—Veterinary Record.

a. HARE, T., 1937.—" A study of 110 consecutive cases of disease in pigeons." **49** (22), 680-686.

(147a) Of a large number of pigeons examined post mortem by Hare death was associated with helminths in 20 cases. There were 9 acute and 10 chronic cases of Capillaria ; the lesions found are described. Acute cases died without any premonitory symptoms. The death of a year old hen, which was extremely emaciated, was attributed to the presence of a heavy infection with *Ascaridia columbae* which had brought about considerable haemorrhages and erosion of the mucosa. P.A.C.

148—Zeitschrift für Fleisch- und Milchhygiene.

a. UNGER, 1937.—" Ein Parasit in Rotbarschfilets." **47** (13), 260-261.
b. KOLBE, F., 1937.—" Atypischer Befund von *Cysticercus inermis* beim Kalb." **47** (13), p. 261.
c. TRAWIŃSKI, A., 1937.—" Das Fleischproblem in Polen im Jahre 1935." **47** (15), 298-299.

(148a) Unger writes a brief note on a parasite from perch identified by Fuhrmann as a larval tetraphyllid, probably adult in a shark. B.G.P.

(148b) The finding of numerous *Cysticercus bovis*, living and degenerate, in a calf of three to four weeks, leads Kolbe to point out that the growth of this parasite must be about twice as rapid in the young calf as in the adult cow. B.G.P.

(148c) Reporting on the incidence of disease in the animals slaughtered in Poland during 1935, Trawiński gives data for Cysticercus, hydatid, liver fluke and Trichinella under the headings Cattle, Calves, Pigs, and Sheep and Goats.

B.G.P.

149—Zeitschrift für Infektionskrankheiten, Parasitäre Krankheiten und Hygiene der Haustiere.

a. MATOFF & WAPZAROWA, 1937.—"Wieviel Jungtrichinellen kann eine weibliche Darmtrichinelle gebären?" 51 (2), 89-98.

(149a) Matoff & Wapzarowa fed 23 mice on 2 Trichinella larvae each. Only 8 mice (34·8%) became infected with larvae in the muscles, the remainder probably having received larvae of the same sex in the initial infective dose. In these 8 mice, the numbers of encysted larvae in the whole voluntary musculature varied from 230 to 507, with one showing an anomalous result of 2 larvae only, both in the diaphragm. On an average, therefore, 315 larvae may develop from a single adult female, but since a certain number of larvae perish elsewhere in the body of the host, this figure is not indicative of the number of larvae to which a single adult female may give birth.

V.D.S.

150—Zeitschrift für Parasitenkunde.

a. HEINZE, K., 1937.—"Die Saitenwürmer (Gordioidea) Deutschlands. Eine systematisch-faunistische Studie über Insektenparasiten aus der Gruppe der Nematomorpha." 9 (3), 263-344.
b. KAHL, W., 1937.—"Eine Tetrarhynchidenlarve aus der Muskulatur von *Sebastes marinus* L." 9 (3), 373-393.
c. HÜBNER, F., 1937.—"Über den Parasitenbefall des Rehwildes in Ostpreussen." 9 (3), 424-427.

(150a) Heinze has made a systematic and faunistic study of the German Gordiid worms. After a brief historical review the author mentions the source of his material, which was mainly provided by several German and other zoological museums, and the technique used in his examination of the specimens. After discussing the various systematically important characters of the cuticle which, it is pointed out, are present before the worm leaves the arthropod host and, after leaving it, undergo no further change, and their relative values in the diagnosis of species, the author gives a key to the various genera and morphological descriptions of 43 species and subspecies of which the following are new to science: *Euchordodes libellulovivens*, *Paragordionus rautheri*, *Gordionus preslii bilinareolatus* n. subsp., *G. thienemanni*, *G. dubiosus*, *G. silphae*, *G. lenae*, *G. semistriatus*, *G. molopsis*, *G. punctulatus*, *G. scaber silesiae* n. subsp., *G. dorieri*, *Gordius undulatus*, *G. dectici*, *G. gesneri*, *G. tirolensis*, *G. plicatulus*, *G. germanicus* and *G. nonmaculatus*. A diagnosis of *Euchordodes* n.g. of which the first named new species is the type, is also given.

In a discussion on the geographical distribution of the German Gordiids the author divides the species into 5 faunistic regions, those from mountain waters appearing to show special modifications in their life histories. The finding of *E. libellulovivens* is of interest since it belongs to the Chordodinae, a subfamily mainly distributed in tropical and subtropical regions. The author concludes by giving a tabular review of the various insect hosts and their respective Gordiid parasites. J.N.O.

(150b) Kahl gives a very detailed description, illustrated from transverse sections, of a tetrarhynchid larva encysted in the musculature of a *Sebastes marinus* from the Norwegian coast. The species is probably *Tetrarhynchus erinaceus*. B.G.P.

(150c) Hübner associates *Chabertia ovina* rather than *Haemonchus contortus* with the severe parasitosis of roe-deer in East Prussia. The former was present in 95% of the deer examined. Among other parasites found he cites *Bunostomum trigonocephalum* and *Setaria labiato-papillosa* as being of pathogenic importance. B.G.P.

151—Zentralblatt für Bakteriologie. Abteilung I. Originale.

a. GALLI-VALLERIO, B., 1937.—" Sur un sarcome du *Mus rattus* en relation avec *Cysticercus longicollis* Rud." **139** (3/4), 129-130.

152—Zoologischer Anzeiger.

a. TULAGANOW, A., 1937.—" Nematoden der Tomate und des sie umgebenden Bodens." **118** (9/10), 283-285.

b. SOÓS, A., 1937.—" *Pseudorhabdolaimus limnophilus* n. g., n. sp., eine neue, freilebende Nematode." **118** (11/12), 323-325.

(152a) Tulaganow reports on collections of nematodes taken from tomato plants and from the surrounding soil in various parts of U.S.S.R. A table sets out all the species encountered with indications as to whether the specimens occurred in stem and leaf, root or soil. *Longidorus georgiensis*, a dorylaimid, is described as a new species. T.G.

(152b) Soós describes and figures *Pseudorhabdolaimus limnophilus* n. g., n. sp., a free-living nematode, found amongst moss in Hungary. Measurements are given and the relationship of the species, females only of which were found, to *Rhabdolaimus terrestris* is discussed. T.G.

NON-PERIODICAL LITERATURE.

153—CHITWOOD, B. G. & CHITWOOD, M. B.—" An introduction to nematology." Washington, Section 1, Part 1, 53 pp.

The first part of a work on nematology by Chitwood & Chitwood consists of 4 chapters. The first is a historical introduction ; the second covers the general structure of nematodes and contains a brief outline of classification

under higher categories. In chapter three an account is given of the cuticle and of structures formed from it and from the hypodermis. Chapter four deals with the somatic musculature, connective tissue, the body cavity and organs of the body cavity. Each chapter has a list of references. There are numerous illustrations, many of which are original, and the work ends with a classification of the whole group. T.G.

154—GALTSOFF, P., LUTZ, F. E., WELCH, P. S. & NEEDHAM, J. G.—"Culture methods for invertebrate animals; a compendium prepared co-operatively by American zoologists." Ithaca, xxxii + 590 pp.

Culture methods for helminths are briefly summarized from various published contributions. Those for intermediate hosts are dealt with under the appropriate zoological group. R.T.L.

155—LAPAGE, G.—"Nematodes parasitic in animals." London, x + 172 pp.

In this book, issued in Methuen's series of biological monographs, Lapage naturally devotes most of the space to biological aspects of the nematodes parasitic in animals. Structure, life-histories and classification are briefly outlined in the first 27 pages and there follow sections covering the metabolism of nematodes (pp. 28-95) and the various types of host-resistance (pp. 96-130). After a compact summary of control methods follow a bibliography of 404 references and an adequate index. B.G.P.

156—SCHMID, F.—"Diagnose und Bekämpfung der parasitären Krankheiten unserer Haustiere." Berlin, vii + 134 pp.

Schmid's book on the diagnosis and control of the parasitic diseases of domesticated animals is intended as a practical handbook for veterinary practitioners and students. A preliminary section of 30 pages roughly classifies the parasitic protozoa, helminths and arthropods and deals briefly with life-histories, diagnostic methods, principles of control, and immunity. In the following ninety-odd pages brief notes on the parasites, their treatment and control, are grouped under the host animals: horse, ruminants, pig, carnivores, birds. B.G.P.

157—YAMAGUTI, S.—"Studies on the helminth fauna of Japan. Part 17. Trematodes from a marine fish, *Branchiostegus japonicus* (Houttuyn)." Kyoto, Japan, 15 pp.

Branchiostegus japonicus is an important food fish of Japan. Its internal parasites include *Lepocreadioides branchiostegi* n. sp., *Plagioporus branchiostegi* n. sp., *Trigonotrema alatum* Goto & Ozaki, referred to the family Lepocreadiidae, and *Glomericirrus amadai* n. g., n. sp. of the Hemiuridae. A new family Opisthogonoporidae is erected near the Allocreadiidae for *Opisthogonoporus amadai* n. g., n. sp., and Sphincterostomatidae n. fam., near the Opecoelidae, for *Sphincterostoma branchiostegi* n. g., n. sp. One ectoparasite is described, *Microcotyle branchiostegi* n. sp., from the gills. E.M.S.

158—YAMAGUTI, S.—" Studies on the helminth fauna of Japan. Part 18. Two species of trematodes from the intestine of a tortoise, *Amyda japonica* (Temm. et Schleg.)." Kyoto, Japan, 4 pp.

Yamaguti redescribes and revises the diagnosis of *Kaurma longicirra* Chatterji, and describes also *Astiotrema orientale* n. sp. E.M.S.

159—YAMAGUTI, S.—" Studies on the helminth fauna of Japan. Part 19. Fourteen new ectoparasitic trematodes of fishes." Kyoto, Japan, 28 pp.

Yamaguti describes *Ancyrocephalus thysanophrydis* n. sp., *A. lethrini*, n. sp., *Haliotrema spirophallus* n sp., *Epibdella* (*Epibdella*) *sekii* n. sp., *E.* (*Epibdella*) *epinepheli* n. sp., *E.* (*Benedenia*) *convoluta* n. sp., *Cyclobothrium iniistii* n. sp., *Hexacotyle dissimilis* n. sp., *Microcotyle cepolae* n. sp., *M. spari* n. sp., *Axine chinensis* n. sp. *Ancylodiscoides* n. g., of the Gyrodactylidae is described with the species *A. parasiluri* n. sp., *A. asoti* n. sp., and *Octoplectanocotyla trichiuri* n. g., n. sp. of the Octocotylidae. E.M.S.